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FOR THE RADIO AMATEUR AND AMATEUR RADIO

The SHORT-WAVE Magazine

EDITORIAL

Competition

Taking an objective look at Amateur Radio, one cannot fail to see the extent to which the competitive angle has been developed.

There are those — and their opinions are worthy of respect — who regard the competitive aspect of the game as tending to bring it into disrepute and so likely to be harmful to Amateur Radio as a hobby. On these grounds we are sometimes assailed by well-meaning readers who feel it their duty to point this danger out to us.

Now, while there is obviously much to be said for both sides on an issue of this kind, the essential truth of the matter is that a high standard of achievement can best be obtained by encouraging keen competition — this is true of all walks of life. The striving for high achievement encourages efficiency, both personal and technical. The result is progress, even if certain undesirable characteristics (latent in the human race) are inflamed thereby.

As Amateur Radio must progress if it is to live, it has always been our policy to maintain the competitive interest in those various aspects of operating activity to which the factor of competition can usefully and properly be applied.

But this certainly does not mean that everyone, everywhere, should be trying feverishly to outsmart his neighbour. These competitive activities can be followed vigorously, in moderation, or not at all—just as the individual feels inclined. There are, indeed, many (and probably the majority) who have never entered into any competitive activity at all in the Amateur Radio context. They are those who make their own way along the paths of fascination offered by a great scientific hobby such as ours without feeling the slightest urge or need to join in on the competitive side.

Austin Forbes G6FO.

VERTICAL AERIAL SYSTEM FOR THREE BANDS

DESIGN, INSTALLATION AND ADJUSTMENT

G. A. SWINNERTON (G6AS)

This article describes what is in effect an efficient transmitting array for 20-40-80 metres, requiring only about 40ft. square of ground space and 50ft. of height. It conforms to modern commercial practice in the use of vertical mast radiators, and has been found to give very good results by comparison with conventional aerial systems, markedly so on the 14 mc band.—Editor.

TWO years ago the writer, in common with many others, realised that existing aerial systems in use chiefly for the HF bands were no longer good enough for the approaching sun-spot minima period. For some years the primary requirement would be an efficient antenna for 14 mc which could also be used for 3·8 mc, or occasionally 7 mc. It was also decided that the system must occupy limited space, and be neat and tidy in appearance, to avoid criticism from residents in the area. A vertical radiator of 5/8th wavelength on 14 mc met these demands, while capable of being used as a multi-band system for lower frequencies at quite high efficiency. This type of radiator seemed reasonably easy to arrange; a 2½in. diameter aluminium mast 30ft. high had to be insulated from earth, and 11ft. added to make a total of 41ft., with a ground system, a transmission line from the transmitter approximately 150ft. away, and a matching network to resonate the system.

General Description

According to design practice the optimum height for a vertical aerial working against ground is ·625 (5/8th) of a wavelength for maximum low-angle radiation and minimum high-angle sky wave. Therefore, if such a system is made 41ft. high, its efficiency on 14 mc will be good and, being ·31 of a wavelength on 7 mc, still have low-angle radiation on that band; it will also work satisfactorily on 3·8 mc, although only just over 1/8th wavelength in height for 80 metres.

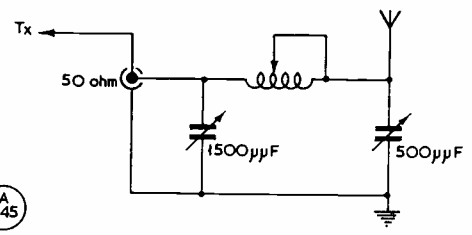


Fig. 1. Circuit for a two-band tuner, 3.8 and 14 mc, using a rotary coil such as can be found in various items of surplus. This enables a very accurate match to be obtained.

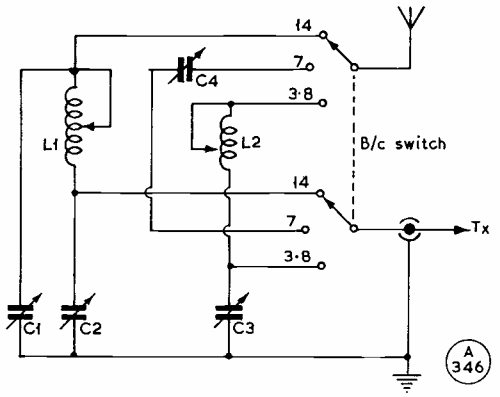


Fig. 2. A three-band ATU for the vertical mast radiator, pre-tuned, switched and built into a biscuit tin, installed at the base of the mast. C1, C2 are 500 μμF; C3 is .0015 μF; C4 is 300 μμF; L1 can be 2 μH for 14 mc, and L2 10 μH for 3.8 mc; 40m. is resonated by series tuning.

A two-band aerial tuner to match a 50-ohm transmission line is shown at Fig. 1; it consists of a rotary coil of 10 μH in series with the aerial and the inner conductor of the 50-ohm transmission line, with variable condensers as shown. This can be arranged to match the transmission line to the antenna exactly at either 3·8 or 14 mc. Although a similar arrangement could be used for 7 mc it is simpler in practice to insert a series condenser for this band to shorten the radiator electrically to a ¼-wavelength, and this then offers a good match to a 50-ohm line.

Radial System

Any such design working against ground is no better than its earth system and an ideal arrangement would be as many radials as possible, as long as the radiator itself, formed into a circular pattern with the ends joined. In the writer's case it was not possible to obtain a full circle of radials, but five such of 7/22's bare copper wire averaging 50ft. long were buried 6 inches in the ground over a sector of about 100°, connected to several earth rods and to a metal fence. This has resulted in a satisfactory system but could still be further improved.

Construction

The aerial itself consists of two 12ft. and one 6ft. lengths of 1/16th in. gauge aluminium tube, 2½in. in outside diameter, jointed by short lengths of 2in. diameter tube strengthened inside by wooden dowelling, all held together with chromium screws to make firm and safe joints. At the top of the mast a surplus whip base has been attached, together with a whip 11ft. long. The mast is guyed at the top of the 30ft. section by three plastic clothes-lines which extend from the base about 15 feet.

Before the mast was insulated from ground it was secured at the base by being placed over and into a

2in. steel tube 3ft. long buried 18in. in the ground, with a large washer to prevent the aluminium tube from sinking into the earth. When it was decided to insulate the mast itself, this was done by retaining the steel tube in the ground, slipping over another aluminium tube about 18in. long bracketed to a piece of strong timber—*see* Fig. 3, and photograph. The mast was then attached to this piece of timber by two 3in. U-bolts, with rubber grommets (standard fittings obtainable from aerial suppliers).

Tuning Unit

The tuning unit is enclosed in a large biscuit tin. To avoid re-adjustment on changing bands two separate sets of coils and condensers and a series condenser are contained in the unit switched for the three bands, as shown in Fig. 2. The coil for 14 mc need not be larger than 2 μH and the variable capacitor for 7 mc can be 300 $\mu\mu$F. Particular attention must be paid to all connections and heavy conductors used. The box is fixed at the base of the antenna, connected to the earth system, and weather proofed. The condensers, with the exception of that for 7 mc, are of the receiving type, the series one being double-spaced. The rotary coils were obtained from surplus equipment. (The Type 145 VFO contains coils very suitable for 3·8 and 14 mc, and the Command transmitter 7-9·1 mc has a suitable coil for 14 mc but not large enough for 80 metres.)

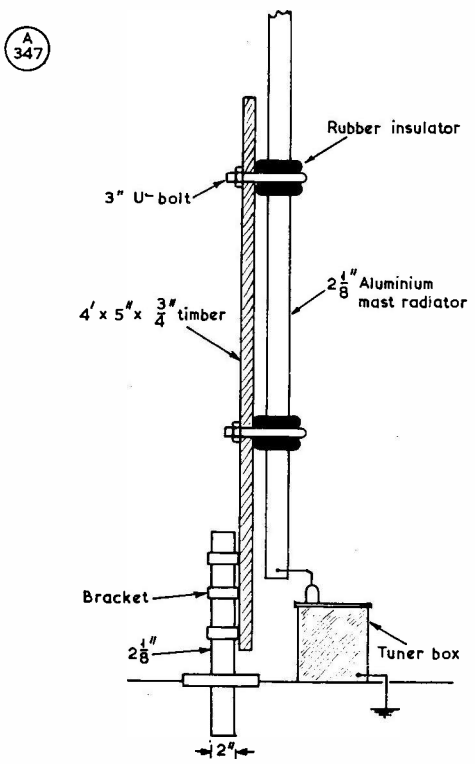
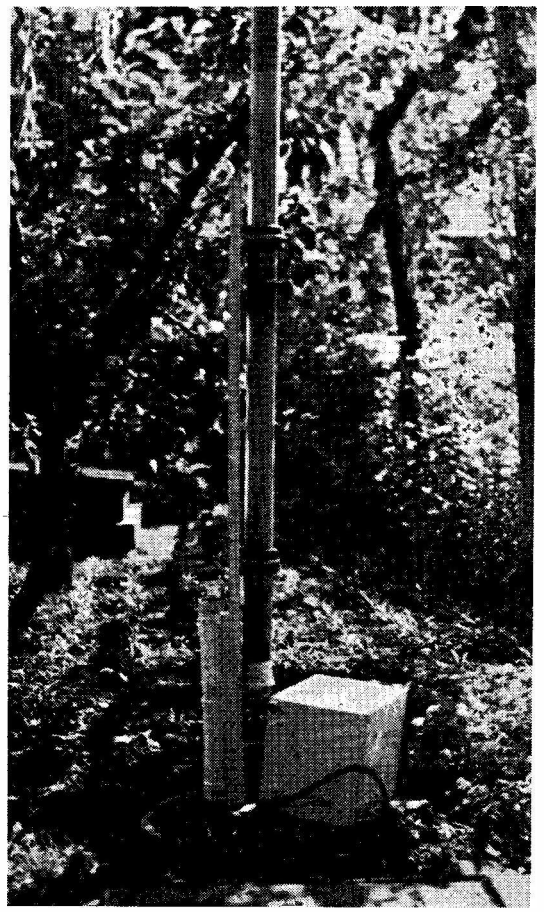


Fig. 3. Details of the base mounting in the G6AS design for a vertical mast radiator. The ATU (see Figs. 1 and 2) is in the (biscuit) box. By using rubber rings and timber as the intermediate support, adequate base insulation is obtained.



Base arrangement for the G6AS vertical radiator, showing the mounting sketched in Fig. 3. The switched ATU, for pre-set coverage of the three bands 3.8, 7 and 14 mc, is in the earthed box.

Operation and Adjustment

Although the method employed for tuning the unit may not be the best it was found fast and simple. Only an F/S meter and a SWR meter are required. For 14 and 3·8 mc the transmitter is run on low power and energy fed to the tuning unit with *condensers all out.* The coil is then tuned for maximum radiation on the FSM and the transmitter retuned to reasonance and SWR readings taken. The condensers are now meshed in easy stages commencing with C2 (or C3 for 3·8 mc) and the coil retuned for maximum field strength until a satisfactory standing-wave ratio is obtained. On 14 mc it may be necessary to employ C1, and this will cause some interaction, so that the whole process should be repeated. The 7 mc adjustment can be made with the GDO, or a combination of the FSM and SWR meter, but the condenser should be fully in mesh at

the commencement and gradually opened until a satisfactory SWR is obtained.

Results

This aerial system has been in operation for about two years and its performance has been compared with a dipole and later with an extended double Zepp on 14 mc, and later still with 3 half-waves in phase. The results on the vertical seldom proved inferior to any of these and at most times were superior. Under certain conditions, particularly with stations more than 4,000 miles away, reports were a good deal better. This has occurred even in the favoured direction of the horizontal wire antennae. On the 7 and 3·8 mc bands no reference antennae have been available but the results have proved outstanding on some occasions and generally up to standard.

On reception, the vertical system has low ionospheric noise and it is worth while on that account alone. Although vertical aerials are prone to interfere with similarly polarised TV antennae, no interference has been caused to the numerous TV sets in the neighbourhood.

This type of aerial system is not in common use by amateurs—which is surprising, considering that it is relatively simple to construct, is easy to adjust with apparatus normally available, and follows commercial practice as employed in many professional

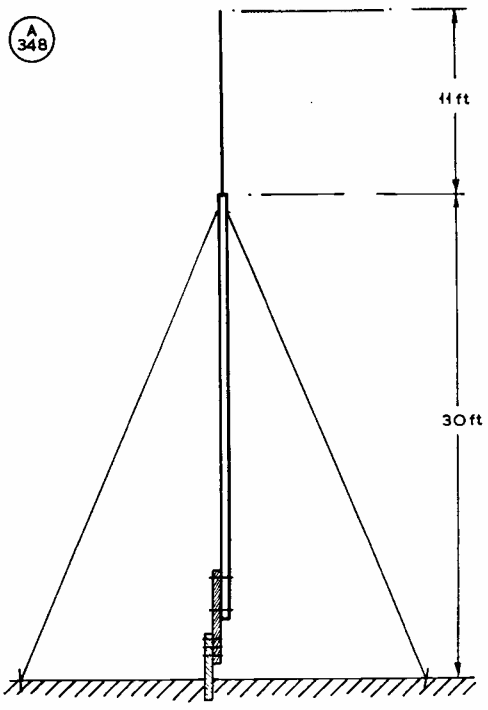
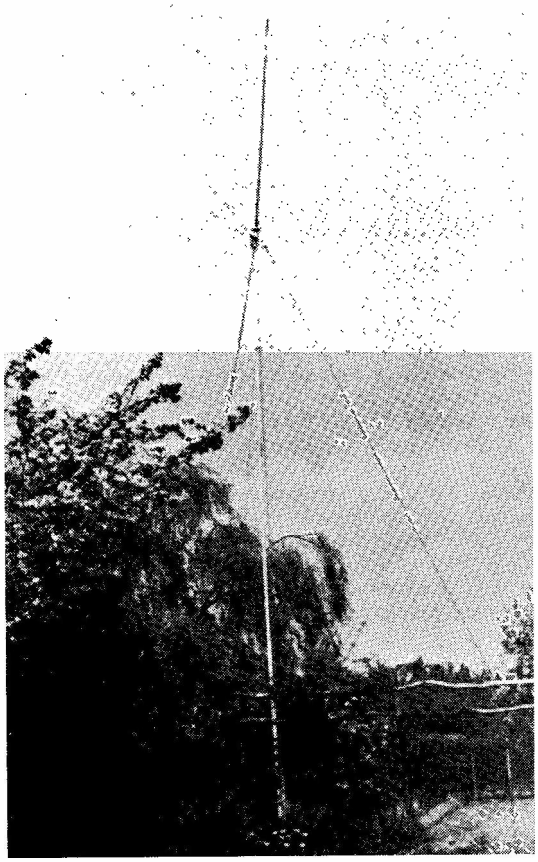


Fig. 4. The general layout, to give 41 ft. of height for the three-band vertical system at G6AS. Three guys are used, of plastic clothes-line, with a 15 ft. spread relative to the mast. A good earth mat is essential to get the best out of the system — see text for discussion.



An impression of the G6AS three-band vertical radiating system; the guying is at 30 ft., and the mast is extended to 41 ft. with an 11 ft. whip. Three plastic cord guys at 15 ft. spread from the base of the radiator give ample support, and the mast also holds up one end of a horizontal aerial.

installations. Futhermore, on 14 mc there is gain over a ¼-wave or a ½-wave similar vertical antenna. The original idea for this system was obtained from an article in *CQ* of July, 1960, by W3JHR, called "The Four Band Vertical DX Antenna Mark II." However, in that design the tuning network was different, employing a coil in parallel with the antenna and ground and tapped positions for the various bands. This required many hours of adjustment and re-adjustment in order to obtain a correct match, because each change of tap for a particular band upset the adjustment for other bands. Therefore, although the basic principles of W3JHR's design have been employed, a simplified method of matching to the transmission line—which could be properly adjusted in the limited time and with the measuring apparatus available—was considered necessary.

Alternative Components

It will be appreciated that the system as described was built from materials and components at hand and to conform with the garden boundaries. Many other arrangements can be devised. For

instance, a suspended wire can be substituted for the mast with some sacrifice in band-width. The co-axial transmission line can be of a different impedance from the 50-ohm employed at G6AS. Also, tapped coils can be used in place of the rotary coils. It is suggested as a guide that the following would be suitable:— 14 mc, 7 turns on 2in. diameter former (tapped at 4, 5, and 6th), 16 gauge enam., double spaced; 3·8 mc, 24 turns (tapped at 16, 18, 20 and 22nd) similarly wound.

For those unable to erect an elaborate DX system for Twenty, the 5/8th vertical should prove better than a ground-plane, a dipole and many types of conventional antennae. It is worth a trial, anyway.

BLEEPER FOR CW MONITORING

RF-POWERED AUDIO OSCILLATOR

THE circuit shown here is of an audio oscillator intended as a sidetone monitor for use with a CW transmitter—it is "different" in the sense that it is powered by rectified-RF picked up from the transmitter to be monitored; hence, not even a battery supply is required.

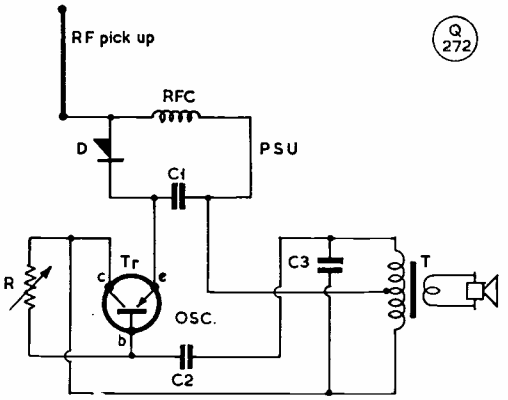
Of course, it is only by using transistors that this sort of thing is possible—indeed, the device was inspired by an article in SHORT WAVE MAGAZINE as long ago as July 1956, in which was described a simple receiver powered by RF picked up from the BBC Light Programme transmitter, and rectified to give a few volts and milliamps. for a transistor amplifier preceded by a crystal detector. (The thing worked like a charm, and the audio output was sufficient for speaker reception of MW/BC and local Top Band stations.)

Feed-back for the audio oscillator is obtained by using a transistor output transformer T, such as the *Radiospares* T/T7 (which only costs 6s. 9d.), with a small 3-ohm PM speaker of the tweeter variety. The size of the speaker will determine the dimensions of the box in which the monitor can be housed.

Other values are: C1, 0·25 μF; C2, C3, ·01 μF; R, 200K potentiometer; RFC, 2·5 mH standard RF choke; D, OA72 or similar rectifying diode; and TR, an OC75.

To set the monitor going, show the pick-up rod some RF by placing it a foot or so away from the tank circuit or aerial lead of the Top Band Tx, and adjust on R till oscillation starts—this will be around the half-way mark if a 200K pot. is used. The tone can be adjusted by further variation of R, and also in the value of C3. This may be necessary if the R-setting for stable oscillation produces an audio note which is not acceptable; however, with the values given here, the output should be a sharp, medium-pitched whine as the transmitter is keyed.

As the device is aperiodic, *i.e.* will respond at any frequency on which there is sufficient RF pick-up to produce rectified output, it follows that it should be used carefully in the presence of high-power transmitters on the HF bands, as either diode rectifier of transistor could be damaged if RF pick-up is excessive. Hence, it is advisable to get started using a relatively low-level RF source, such as a 160m. transmitter. The degree of coupling required will vary from band to band, and a refinement would be to tune the PSU input if sufficient RF power cannot be obtained—as when using a fully screened transmitter and ATU, with all the interconnections at low impedance. In such a case, it might be necessary to contrive an RF probe for coupling the PSU to the Tx. But introducing tuning or metering would only be complications robbing the device of its essential simplicity, and in the ordinary way should not be necessary.



Circuit of the self-powered device for monitoring a CW signal. The RF picked up is rectified and used to power the transistor, connected as an audio oscillator. The resistor R gives some control of pitch.

MIDDLE EAST MARKET SURVEY

The overseas sales representative for Redifon, Ltd., of Wandsworth, London, is Ken Ellis, G5KW, who is now on an extended business tour of the Middle East, which he knows very well. Having lived in those parts for about 18 years and acted as adviser on tele-communications to the Saudi Arabian Defence Ministry before joining Redifon, he speaks Arabic fluently.

COURSES FOR THE R.A.E.

As it is intended to start, in the August issue of SHORT WAVE MAGAZINE, the usual listing of centres at which courses of instruction are being given for the Radio Amateurs' Examination, organisers and authorities responsible are asked to let us have details for inclusion in the list. The closing date for the August issue is July 16, and for September it is August 20.

SIMPLIFIED TRANSISTOR POWER SUPPLY

300 VOLTS AT 100 mA, USING STANDARD PARTS

G. M. KING, M.D., B.Sc., D.M.R.T. (G3MY)

THE author has always been deterred from building a transistorised DC to DC converter by the apparent necessity for special toroidal transformers and the general lack of such items at reasonable prices on the amateur market. When the regular vibrator supply recently failed and could not be revived, it was obvious that something had to be done in a hurry and an article in the August, 1962 *QST* seemed to offer a possible solution.

As described here, the power supply has its foundation in this article and was assembled very hurriedly in a weekend. It has worked so well and consistently that a more refined version has not yet been made up—this accounts for a rather untidy under-chassis appearance.

Design is based on readily available standard transistors and a 12-volt vibrator transformer. It will give up to 30 watts (300 volts at 100 mA) output and has been used to power a variety of mobile transmitters and receivers.

The OC28 transistors are used in a simple resistance-coupled multivibrator circuit and, with the transformer specified, oscillate at a frequency of 50 to 60 c/s depending on the actual load. Starting is instantaneous even in the coldest weather, and with a full load on, the supply and the transistors run very well within their ratings.

Due to the low frequency of oscillation, there is very little tendency to radiation of RF noise and a simple filter in the live battery lead effectively silences the supply on all bands from 160 down to two metres. An additional benefit is the complete absence of that high-pitched whine which is so common with many of today's high-cycle units.

A standard 6in. x 4in. x 3in. 16g. aluminium chassis provides ample space for all the components and gives 120 sq. inches of heat sink for the two power transistors. The general disposition of the major components can be seen the photograph here.

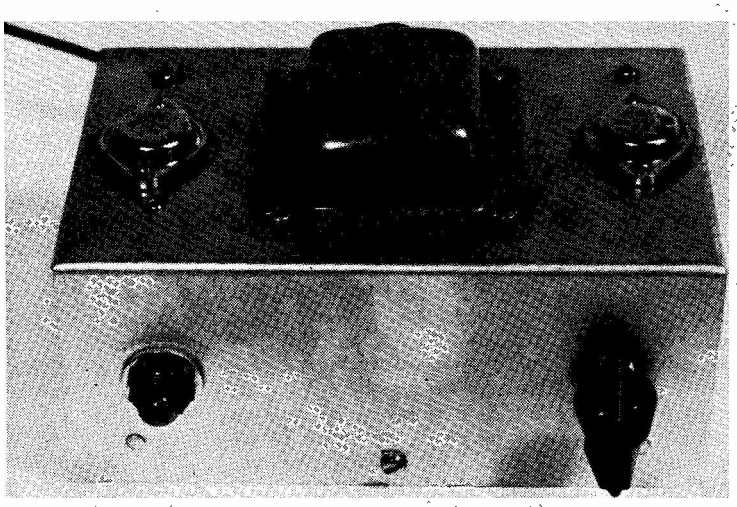
Constructional Points

To permit drop-through mounting the vibrator transformer is slightly modified physically and the three leads from the secondary winding must be taken through to the under side of the chassis. The OC28 transistors are insulated from the chassis by thin mica washers (made by the manufacturers for this purpose) and when the unit is being assembled, it is desirable to give both sides of these washers a thin smear of silicone grease to improve the thermal conductivity to the heat sink.

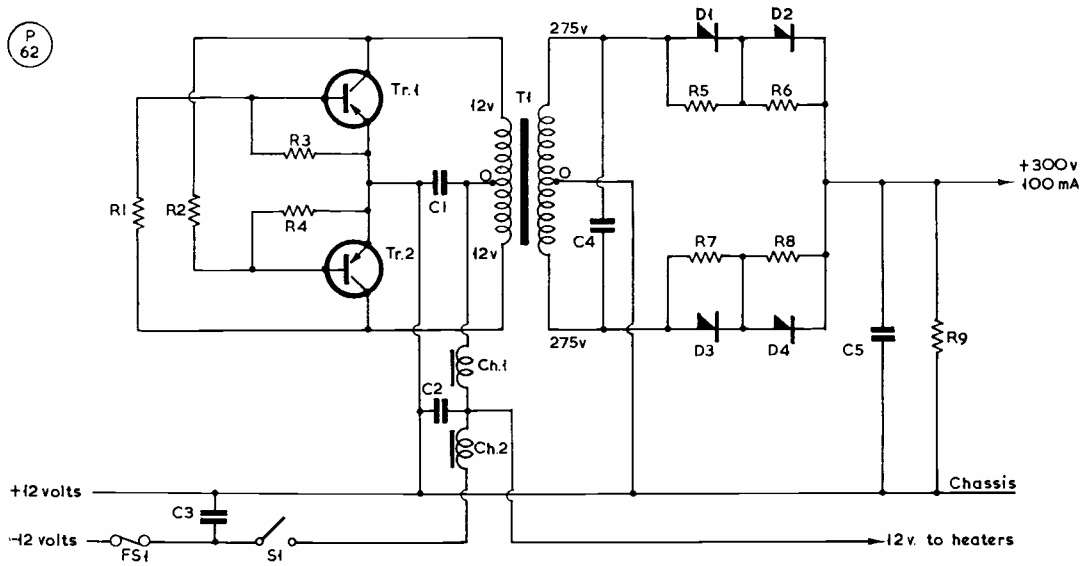
The use of resistance networks to provide feedback for oscillation inevitably reduces the efficiency of the supply slightly but even so, the measured efficiency at full output is of the order of 75% and so this small loss is of little significance. After long periods of operation at full output the transistors are only warm to the touch and their case temperature does not exceed 45°C.

AC output from the secondary winding is between 620 and 680 volts, depending on the state of the car battery, and is rectified by silicon diodes. To allow an adequate safety factor, two 800-volt p.i.v. units are used in series in each arm of the full-wave circuit and high-value resistors are placed across each diode to equalise the inverse voltages. A high-voltage condenser is connected across the secondary winding to suppress switching transients and on the oscillosocope it has been found that the voltage spike on the leading edge of each square-wave has an amplitude less than 15% greater than the plateau level of the wave. This condition occurs when the supply is run unloaded; at full load, the spike virtually disappears and under no conditions does it represent any danger at all to transistors or diodes.

Construction is simple and straightforward and



One way of constructing the transistor power supply unit discussed in the article by G3MY. Mounting the OC28's in the manner shown here ensures adequate heat-sinking, some points about which are brought out in the text. The transformer is a standard item as used for a 12v. vibrator HT circuit, and the final output is about 300v. at 100 mA, very suitable for mobile equipment.



Circuit of the transistor power supply unit — giving about 30 watts at 300v.— designed and described by G3MY in his article. The simplification lies in the fact that a standard 12-volt vibrator transformer (with centre-taps on both windings) is used for oscillation, at a lower frequency than usual, and voltage step-up. The result is stable output with a good load characteristic, so that the pack is particularly suitable for mobile work where the vehicle electrics are at 12 volts. The resistors R5, R6 and R7, R8 are to equalise the voltage across the diodes. By using standard 800v. p.i.v. types for D1-D4, a more than adequate safety factor is assured.

Table of Values

The Transistor Power Unit

C1, C2 = 500 μF, 15v. wkng.
C3 = .001 μF, cer.
C4 = .05 μF, 800v. AC wkng.
C5 = 16 μF, 450v. wkng.
R1, R2 = 100 ohms, 5w.
R3, R4 = 15 ohms, 5w.
R5, R6, R7, R8 = 560,000 ohms, ½w.
R9 = 68,000 ohms, 3w.
Ch.1, Ch.2 = TV-type supp. chokes, 10 amp. rating
D1, D2, D3, D4 = 800v. p.i.v. silicon diodes (Lucas DD008, Mullard BY100)
TR1,TR2 = Mullard OC28
F = 7.5 amp. LT fuse
T = 12-volt input vibrator xformer

Note: Most of these parts are standard *Radiospares* items.

the placing of parts not critical, although the usual precautions should be taken to use a temporary heat sink when soldering to the base and emitter leads of the OC28's and the silicon diodes, to prevent excessive heat being transmitted to the junctions.

A 16 μF 450-volt electrolytic reservoir condenser is placed across the high-voltage output of the supply to give some measure of smoothing and a simple two-stage hash filter is included in the live 12-volt input line. This serves the double purpose of preventing the radiation of noise from the pack and also the transmission of noise from the electrical equipment of the car into the mobile gear *via* the filament supply. The iron-cored chokes specified for this filter are standard items readily available for suppressing electric motors and similar equipment.

In conclusion, the writer would say that this unit has proved reliable and foolproof and is certainly the answer for anyone wanting to build a transistorised power supply which can be guaranteed to work first time and without the trouble and expense of special toroidal transformers.

SCOUT INTERNATIONAL RADIO EVENT

The 6th Annual Jamboree-on-the-Air, during which Scouts and those interested in the movement join in a QSO-party, is to be held over the weekend October 19-20. There is always a good entry from the U.K. and last year the international participation totalled 63 countries. It is expected that this will be exceeded for this year's event. The U.K. organiser is L. R. Mitchell, G3BHK, Katoomba, Tyneham Close, Sandford, Wareham, Dorset, who would be glad to hear from Scout groups able to run their own station, and also from AT operators in a position to arrange participation for local Scouts, either at their station or by way of a field-day weekend. Coverage by the official Hq. station VE3WSB, Ottawa, will be of the 15-80m. bands inclusive for the whole 48 hours, the VE3SWB transmitters being on spot frequencies in the CW/AM/SSB areas of these four bands.

BACK TWENTY-FIVE YEARS

The July, 1938, issue of SHORT WAVE MAGAZINE continued the "Transmission for Beginners" series with descriptions of a phone monitor and 40m. crystal oscillator; there was a useful discussion on The Receiving Aerial; the page on The Other Man's Station featured G6WY, now VE3BWY, who at that time was running a Goyder Lock PA system using a T61D and DET1, with an 8-valve single-signal superhet as receiver; the general-interest article was on Spanish Nationalist Radio, as that most bitter of all civil wars was then raging; and Webbs of Soho Street were offering a new American communications receiver, the Hallicrafters "Sky Champion." The price? £15, and that was complete with speaker.

AUTOMATIC RECEIVER MUTING

CIRCUITS AND IDEAS FOR T/R SWITCHING

THE need for accurate, ultra-rapid T/R ("transmit-receiver") switching became a prime requirement with the war-time development of radar, where both receiver and transmitter are connected to the same high-gain aerial system, and the receiver must be de-sensitised for the duration of the pulse radiated by a transmitter running many kilowatts. With high p.r.f. ("pulse recurrence frequencies") of several hundred cycles per second, the send-receive change-over had to follow accurately to give adequate receiver protection during the pulse cycle.

In amateur practice, the requirement is nothing like so severe, nor is the receiver exposed to RF power at such high levels—nevertheless, in SSB working under voice-control (Vox) conditions and for really effective CW operation, any form of manual switching is quite out, and the proper solution is an electronic change-over system.

Note, however, that the real function of what has become known in amateur practice as the "T/R Switch" is not, in fact, as a change-over system at all, but is a method of blocking off the Rx from the aerial during transmission periods—it being presupposed that the same aerial is being used for both transmission and reception (as it always should be).

Practical Circuits

The circuits and layouts shown here are practical expressions of the electronic T/R switch, and can be relied upon to give satisfactory results in amateur working. In each case, input to the switch is by coax tee'd in to the aerial feeder.

In Fig. 1, we have perhaps the simplest arrangement. The series-resonant network C1/L1 is in effect a short circuit connecting the transmission line to the receiver. When the Tx is up, the RF voltage ignites the neon, so that the voltage presented to the Rx is held to a low value. By using a very small capacity for C1, the detuning on the Tx side due to the action of the neon is negligible. The resonant circuit must anyway be kept low-C for the voltage across the neon to be high enough to fire it as soon as possible. In the ordinary way, this circuit will be sufficiently broad-band to cover most of any given band area (CW or phone allocations) and the adjustment is simply to peak the circuit around the mid-frequency of the required band. For CW Tx powers up to 100 watts or so, a ½-watt neon firing at around 50v. should be used. For a full power SSB transmitter, the rating should be at least 2 watts (this power will, of course, be lost to the signal radiated). The circuit of Fig. 1 is most effective with a CW transmitter, in which the PA is well biased off in the key-up condition, thus ensuring that shot-noise is not fed to the Rx on reception. Since a tuned circuit is involved, it is a one-band device.

At Fig. 2 is a circuit which gives better protection and only slight Rx signal attenuation, of the order of about 4 dB at worst (say, one S-pt.) over the whole HF range. The cathode-follower configuration ensures a good match into the receiver, most of which are designed for input impedances of 50-100 ohms, whilst on the input side of the switch the impedance is high, so that the valve will absorb minimum RF power on "transmit," during which it is completely cut off provided the HT is kept around 150v. or so—if too much HT is used, it follows that the cathode may not go far enough positive to achieve cut-off. With the values given, cut-off should be about right with a 100w. Tx, and the receiver is given absolute protection. The time-constant of the C1-R1 network is short enough to ensure virtually instantaneous receiver recovery. The limiting factor with the circuit of Fig. 2 is the grid-cathode breakdown voltage, and C1 must of course be rated high for the same reason. However, since these circuits are all

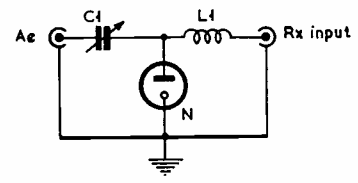


Fig. 1

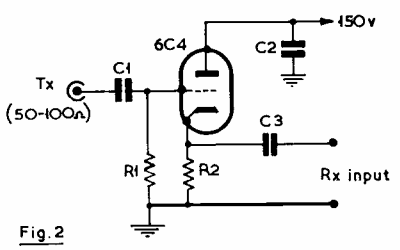


Fig. 2

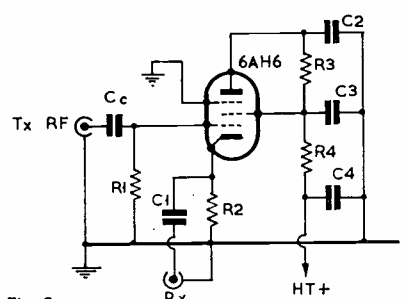


Fig. 3

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Fig. 1. Basic T/R switch, in which the neon bulb takes the RF load; C1 is 50 μμF, and L1 wound to resonate in the band required — say, 27 turns of 28g. on a 3/4 in. diameter former for 14 mc. Fig. 2 is a cut-off valve circuit, and values are: C1, 50 μμF, 500v.; C2, C3, .01 μF; R1, one megohm; and R2, 500 ohms; the valve is a 6C4 or anything similar, and input-output circuits should be screened from one another. Fig. 3. is a circuit for direct connection to the PA tank (see text), in which Cc is 5 μμF rated for the voltage, C1, C2, C4 are .01 μF; C3 is .001 μF; R1, 1.2 megohm; R2, 220 ohms; R3, 1000 ohms; and R4 270 ohms. For each circuit, resistors should be non-inductive, rated 1-watt.

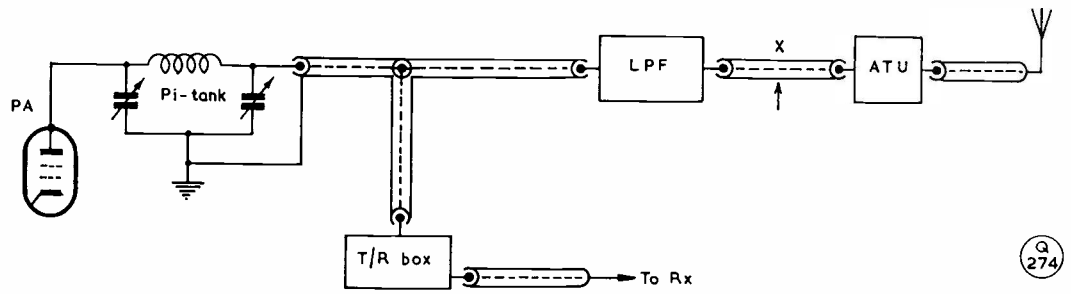


Fig. 4. Connecting in the T/R Box, or send-receive switch, where the transmitter output is at low impedance. The system functions by reason of sufficient voltage being derived from the transmission line to actuate a circuit — as in Figs. 1, 2, 3 and 5 — which blocks off the receiver when the transmitter comes up. The considerations in regard to getting full receiver protection are discussed in the text, and methods of making the Tee-junction required are shown in the drawings in Fig. 6 overleaf.

intended for connection into a low-impedance Tx feeder line, RF voltages will normally be at a minimum. There is no tuned circuit, so that the action is all-band.

Fig. 3 is a variation on the circuit of Fig 2, in that a valve with better grid-anode screening is used and, being able to withstand a relatively high grid-cathode voltage, the input end can be tapped straight to the PA anode; the advantage here is that, if a *pi*-tank circuit is being used for the PA, the inherent selectivity and signal gain (on reception) of the Tx tuned circuit becomes available for the receiver. The coupling capacity Cc must be kept down to about 5 $\mu\mu$F or so, and the condenser rated to withstand three times the DC voltage on the plate of the PA. Because this might involve thinking in terms of 2000v. or more, and the safe grid-cathode working voltage for the 6AH6 is about 250v., the value Cc with the grid-cathode capacity can be thought of as a capacitive voltage-divider giving an 8:1 step-down in the input voltage to the switch. For Cc, 5 $\mu\mu$F is about right for 1000v. plate HT.

The layout for tee'ing-in T/R switches is shown in Fig. 4, and methods of making the junction in Fig. 6. Since in some cases, the insertion loss due to the switch itself *plus* the loss through a low-pass filter may amount to 10 dB or more and so be unacceptable, the T/R box can be connected in at point X in Fig. 4 to by-pass the LPF. The ATU tuned for transmission will compensate in some degree on reception for the insertion loss through the switch.

Improved T/R Switch Circuit

Fully to compensate for T/R switch insertion—in the sense of signal loss on reception—and, indeed, to give an actual tunable gain on the receiving side, a much more sophisticated circuit is shown at Fig. 5. This confers the important additional advantage of excellent front-end discrimination against unwanted signals; in fact, the L1-C5-L2 section in Fig. 5 is a tunable pre-selector external to the receiver. In the circuit and with the values given, it will tune the whole range 10-160 metres (rather sharply at the HF end, it is true) without band-switching.

Functioning of the circuit of Fig. 5 is as follows: The first triode section is a broad-band g.g.t. RF stage on reception, and is a self-biasing cut-off stage during transmission, because RF on the cathode results in a high bias voltage being developed across the $\frac{1}{2}$-megohm resistor R1. The tuned circuit L1-L2-C5 passes the received signal (on "receive" only) to the second half of the triode, working as a cathode follower to give broadly low-impedance coupling into the receiver, as in the other circuits discussed.

Since in this Fig. 5 arrangement, RF on transmission is being fed to the cathode, and cathode-heater breakdown becomes a factor where high RF voltages may be developed, this capacity is reduced by using a bi-filar RF choke RFC 3 in the heater leads. The choke is made by winding on to a $\frac{1}{4}$-in. diameter former two parallel wires of 26g. enamelled to a winding length of about $1\frac{1}{2}$-ins.

To ensure proper input-output isolation and to enable full gain to be developed, the input-cathode end should be screened from the rest of the circuit and the whole unit built into a metal screening box. Probably the best arrangement is to mount the valve, in a screening can, on top of the box, with the tuned circuit between the input and output ends, and C1/RFC1 in a separate compartment on the input side.

Unit Inter-Connection

As already mentioned, Fig. 4 shows the general arrangement, and Fig. 6 are simple ways of overcoming the difficulty of having no standard coax Tee-connector available. While Fig. 6 (A) is obvious, Fig. 6 (B) suggests how a plug-in connector can be fabricated. Coax sockets are arranged round three sides of the smallest possible box—made by bending up strips of aluminium sheet—with the centre conductors connected together to make the T-junction. By mounting two sockets on one U-shaped piece, a second U-shaped piece (with the third coax socket) at right angles "closes the box," one arm being first bent up sufficiently to allow the final soldering operation to be carried out; an easier way is to use two L-shaped pieces instead of the second U-bend, though this slightly complicates holding the box together. If aluminium soldering is not feasible, the box can be flanged and locked up with self-tapping screws. Yet another way of holding the box sections together is by lengths of 6 BA studding going right through. And, of course, if some brass or copper strip is to hand,

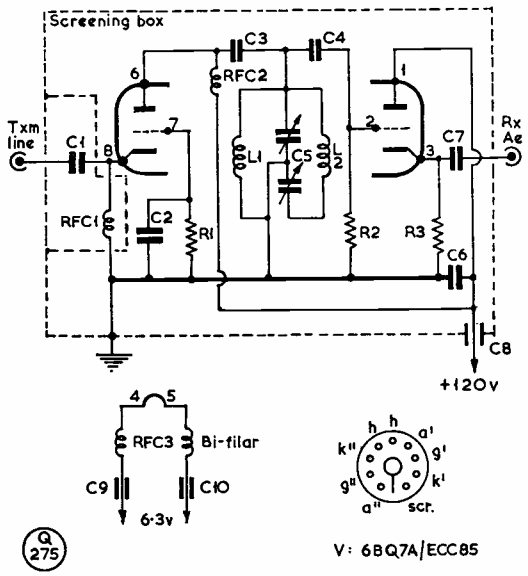


Fig. 5. A more sophisticated T/R switch, in that a tuned circuit is incorporated to give pre-selector action and therefore input gain on "receive." The first triode half is cut off on "transmit," and to prevent coupling by stray feed-through, the input and output sides must be fully screened from one another, with power leads in feed-through condensers. Values are: C1, 500 μμF; C2, C7, .01 μF; C3, 150 μμF; C4, C6, .001 μF; C5, 400 + 400 μμF, BC Rx type, connected split-stator; C8, C9, C10, .001 μF, feed-through; R1, ½-megohm; R2, 50K; R3, 100 ohms; RFC1, 2.5 mH standard RF choke; RFC2, 21 μH, VHF type; RFC3, bifilar heater choke (see text). L1 is 19 turns of 18g. on a 1-in. former, slightly spaced; and L2 is 23 turns of 16g. on a ½-in. former, spaced out over 1½ ins. The L1, C5, L2 configuration should give continuous coverage over all bands 10-160 metres, though some coil adjustment may be required. The valve is a 6BQ7A or any of its equivalents.

the easy way is to use that and solder along the outside edges.

The Fig. 6 (A) method, while being the simplest approach has the obvious disadvantage of being too permanent, because the T/R box is not unpluggable. However, if that is accepted, the job can be done neatly with a sharp knife, side-cutters and a light soldering-iron having a fine bit; as care must be taken not to melt away the insulant between centre conductor and braiding, so causing a dead short in the cable, it is as well to use some sort of heat sink while soldering. The joint can be finished off tidily by cutting a piece of aluminium to make a "U-shaped Tee" to fit over the junction, and trimming, bending and shaping as necessary to get a close fit; if this method is adopted, it is as well first to melt a few fragments of insulant on to the junction to enclose the joint, for preventing any internal shorting with the cover.

Some General Points

Enough has been said here to suggest that, for really good results and full receiver protection, a certain amount of experimental work may be necessary with any of these T/R switch circuits. In particular, proper isolation cannot be expected if they are not built into small screened boxes—this is anyway absolutely essential in any layout which already has an LPF and screened ATU in the transmission line; to hang some unscreened piece of apparatus carrying RF on such a transmission line will obviously defeat the whole object of the original screening.

Those without experience of T/R switches of this sort are advised to try first the circuit of Fig 2 with a CW transmitter not running too much power. This will help to establish the principles and prove the working of the system, and its value in practice. In the particular case of CW operation, there is the additional problem of adequate receiver muting. Some good, well screened modern communications receivers will not pick up too much from the transmitter if the aerial input is cut right off, even with the gains fairly well up.

Your own Rx can be tested for this by setting the knobs for normal CW reception, then disconnecting the aerial altogether; signals will (or should) disappear, and the Tx pick-up be no more than comfortable; if too loud, reduce on the AF gain control, rather than the RF, because RF gain may be what you need with the aerial on. Then, on connecting the T/R switch, if the Tx signal is overpowering, either the switch is not working properly, or the lead between T/R switch and Ae. input terminals on the Rx is too long. Your object is to achieve quiet reception of your own signal, with adequate Rx gain in the full receiving condition.

To prevent noise being worked into the receiver the PA must be absolutely quiet electrically in the undriven state—that is to say, it must be biased at least to cut-off, and there must be no squiggers or parasitic effects when the key comes up. Similarly, signal leakage into the T/R switch itself must be minimised by running HT/LT leads with feed-through condensers.

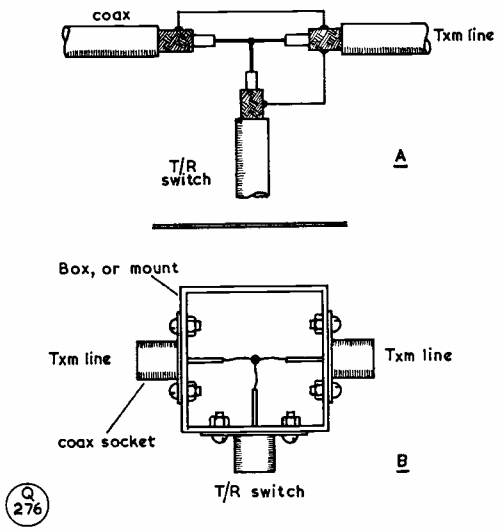


Fig. 6. Making the T-junction for coupling the T/R switch. At (A) is a neat way of doing it, requiring only a sharp knife, a pair of sidecutters and a small soldering iron. Sketch (B) shows how coax sockets can be mounted to make the interconnection pluggable.

• • • The Mobile Scene • • •

LATEST RALLY EVENTS REPORTED—NEWS AND PICTURES FROM CHELTENHAM, HUNSTANTON, HAREWOOD, PANGBOURNE, WOLVERHAMPTON, PENZANCE AND BARFORD—GOOD ATTENDANCES IN BETTER WEATHER

REASONABLE weather being the prime requirement for a successful Rally, the picture this time is a good deal better than last month. With one possible exception—Barford on June 16, where it was threatening and not too warm, with some rain—the recent events took place under very favourable conditions. This had the natural effect of encouraging attendances.

The other requirement for a successful Rally on the large scale is good background organisation—which includes visitor reception, programme of events, prize draw or raffle, refreshment arrangements, and proper accommodation for what might be delicately referred to as "nose powdering"—and the word "background" is used because visitors should not feel all the time that they *are* being organised. This sort of commitment is a tall order for any Rally organiser or organising committee, particularly where large numbers of people are involved, many of them inclined to be critical.

Experience gained with the bigger events over the last few years has resulted in Rally organisation being generally good, while a fine day will usually make up for any shortcomings. It is when the weather turns out gloomy that the resource of the organisers is really tested. This means that bad-weather plans must be made in advance and, either way, a good deal of organising effort is wasted—which is why we say that the commitment is a tall order.

* * *

We draw your particular attention to the programmes at R.A.F. Stradishall for July 28, and at the R.N. College, Dartmouth, for August 11—*see* p.244. These promise to be the rallies of the year, in that they have full Service backing, with the magnificent on-site facilities available at active R.N. and R.A.F. establishments. It is good to see such support, and encouragement, to the local organisers, being given for what are essentially Amateur Radio occasions. These two events, new in the Rally calendar, are certain to be well supported—and we hope that visitors will look for the litter baskets (or take it home with them) as both these establishments are "home" to a great many people.

* * *

All three of the Rallies held on **May 26** had the blessing of a warm and sunny day. Down at **Cheltenham,** they had about 200 people in more than 80 cars fitted mobile—at any rate, the talk-in stations between them worked 80 /M's, which is very good going. The programme highlight here is always the mobile contest, involving motoring round a course within an allowed time, during which contacts have to be made according to a prescribed formula, the object of the exercise being to test motoring and navigating skill as well as the performance of the /M gear. The winner of this event was G2CDN/M, from London, in a Vauxhall Velox; G3RFO/M of Weston-s-Mare, in a Ford Consul, was second; and the third prize went to G3ONX/M, from Stonehouse, Glos., in an Austin A.40. The Rally proper was preceded, on the Saturday evening, by a dinner for which no less than 50 people took places, many of whom had come to stay the week-end in the neighbourhood. The talk-in stations, G5BK/A and G5BM/A, opened early, and during the rally contest, a hired coach took visitors on a tour through some of the delightful grey-stone villages of the Cotswolds.

[over

The setting for the Cheltenham Mobile Rally, a park in the middle of that delightful town of boulevards and terraces, so screened in from every direction but the south-west that you must live on one of the surrounding hills to register on HF or VHF. Those who were at the Rally were not bothered by these aesthetic considerations — they were there to have a good afternoon out. About 80 /M's were booked in.

This was altogether a well-organised affair, enjoyed by all who were present, and much credit is due to the Cheltenham A.R.S. for its success.

* * *

Over at **Hunstanton,** nearly 50 mobiles were registered, in sun-bathing and swimming weather, and the total attendance was up on last year. G3ANM/A handled the talk-in (Top Band only, there being only two /M's not on 160m.), continuously from 10.0 a.m., and one of the competitions was the longest-distance two-way QSO with control; this was won by G3MMS, Boston. The prize for the greatest distance travelled for the day went to G3EQP/M, of Muswell Hill, London. Other prize-winners were G2PU, G3SZ and G5JO, and among those present were, at one end of the time-scale in Amateur Radio seniority, G2NJ of Peterborough, and at the other G3SAW, with a ticket on which the ink was barely dry. The organisers of this very successful effort on behalf of the Peterborough R.S. were G3ANM and G3KPO.

* * *

Now becoming one of the bigger events in the Rally calendar, the Northern A.R.M.S. had about 1,100 people at **Harewood** (this being 500 or so more than last year's attendance) and a total of no less than 225 vehicles actually fitted mobile; of these, 216 were on Top Band, the rest being on HF or two metres, including an American visitor with gear for 6 metres (*cries of "Oh!"*). The talk-in station G3OGV/A worked 95 of the visiting /M's, which meant hard going for the operators. The 160m. transmitting contest was won by G3QV (Bury, Lancs.), and on the two-metre side, the prize went to G3AMM (Scunthorpe, Lincs.). An interesting trade display was put on by N.W. Electrics of Manchester; the Army Apprentices School at Harrogate had two radio-equipped vehicles on show; the R.A.C. provided a local office and route signposting; and the BBC had a TV unit making local-news recordings which were shown in the North on May 27. The proceedings concluded with what is described as a grand surplus equipment sale. The organisation was by the Northern Amateur Radio Mobile Society (claimed to be the largest radio amateur group in the North of England), of which the president is G2VO, the hon. secretary G3LHQ and the publicity secretary G3MGI, assisted by a committee of six members, all holding callsigns.

* * *

Quite a different sort of Rally took place on **June 2,** when the Reading A.R.C. held their third annual informal picnic and mobile meeting at the Childe Beale Memorial Trust, **Basildon,** near Pangbourne, Berks. Though the surroundings might be thought rather odd (there is a good deal of statuary about) it is a pleasant site by the river and, as they had a fine day, some 140 people came along, in 42 cars, of which 35 were mobiles. Nothing is laid on for this event—it is simply a get-together, and none the worse for that. Anyway, they had visitors from Cambridge, Coventry, the Home Counties and South Wales. The next Reading A.R.C. Picnic, at the same place, is on Sunday, August 25, for which screen stickers will be available from G3EJA (*QTHR*).

* * *

For Wolverhampton Amateur Radio Society, at Hobsons Sports Ground, **Fordhouses,** Wolverhampton, on Saturday, **June 15,** it was a first Rally attempt, in conjunction with the local works' sports day and gala. This meant that though the actual /M attendance was relatively small (about 16 fitted vehicles were booked in), the general public came in very large numbers—about 3,000 in all, of whom 100 or so were there purely for the Rally. However, when G3JRL/A, running 20-metre SSB and with only a half-wave slung between the king-poles of a marquee, started working stations in North Africa and U.S.A., the station became one of the most popular attractions of the afternoon! This being familiar enough to the amateurs present, they were more interested in the home-made ATV gear shown by G3KQJ/T, who had it all working. G8TA/A was in action for the 160m. mobiles and, on the competition side, G3JEQ/M had the prize for the longest-distance travelled, from Leatherhead, Surrey; he also got it for the best installation, a two-band rig in his new Morris Traveller. G8CK/M, Stourbridge, was judged to have the safest mobile outfit, in his Vauxhall; and G3RGD, Hall Green, Birmingham, was given the reserve prize for a fine /M rig on a Lambretta scooter. The raffle showed a profit of £6, which was donated to the R.A.I.B.C. Though the Wolverhampton A.R.S. boys had hoped for a bigger turn-out of mobiles (it was a bright and sunny afternoon), nevertheless they feel satisfied with their organisation for this initial effort.

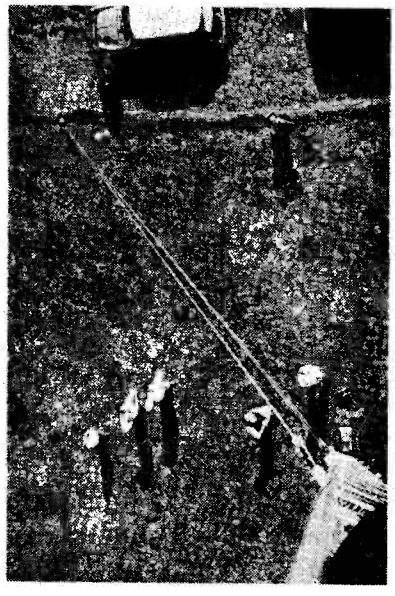
* * *

For the Cornish Radio and TV Club's first Mobile Rally and Exhibition at **Penzance** over **June 15-16,** the weather was variable and though it had not been possible to arrange full advance publicity, nevertheless they had 148 paying visitors and the event—which was a fund-raising effort in aid of the local Cheshire Home and the R.A.I.B.C.—was supported by about 50 club members in addition. The exhibition was representative of both trade apparatus and locally constructed amateur-band gear; an interesting feature was the display of very early radio equipment, including a model of the first Eddystone Rx ever built, and still in working order. Due to local site difficulties, there was some trouble in getting the exhibition stations on the air, and keeping them going. Among the GDX visitors welcomed were G3ABB/M from Danbury, Essex, who got the prize for the best commercial mobile installation, in his Vauxhall Victor, and also that for the longest-distance /M contact with control on two metres; G3GMN/M, Longford, Glos., who was the winner for the best home-constructed mobile rig; G3IWV/M, West Purley, Dorset, who had the prize for the longest distance worked on 160m. mobile; and G3ICO/P, who was given the special award for the most original /P, /M layout (in a Messerschmitt bubble). Though

Seen at the N.A.R.M.S. Mobile Rally at Harewood on May 26 — old timer G2XY of Leeds.

View of part of the car park at Harewood House, near Leeds, where the N.A.R.M.S. held their annual Mobile Rally. The solitary /M operator in view is G3AMM of Scunthorpe, well known in northern parts as a keen mobileer. There were more than 200 cars actually fitted mobile at this year's Northern A.R.M.S. Rally — and we are asked to say that there is no connection whatever between N.A.R.M.S. and A.R.M.S. The confusion is one of name only, as they are entirely separate club organisations, both in the mobile interest.

The scene at Harewood House, near Leeds, residence of the Princess Royal, and the venue for the Rally held by the Northern A.R.M.S. They had a very good attendance of about 1,100 people, in fine and warm weather. The arrangements for visitor-reception (at the tent on the right) are particularly good at this Rally.



Mast-head view of the Cheltenham Mobile Rally, from a height of 80 ft. It carried a turnstile for two metres and was the radiator for G5BK/A, the 160m. Tx on talk-in. The intrepid photographer was GW3RXA, up there to fix the turnstile.

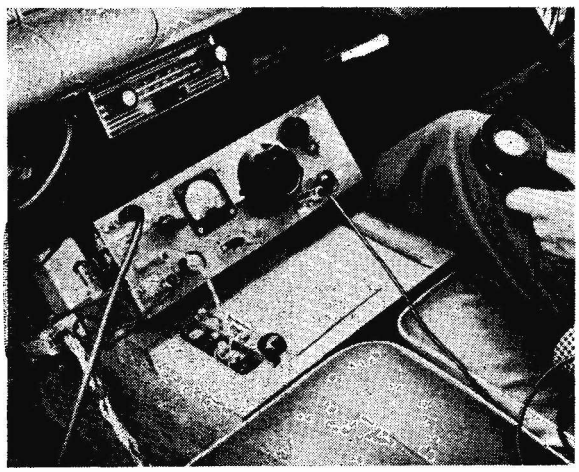
G5BK/A talked in on Top Band for Cheltenham, no less than 65 mobiles being worked on 160m. The Heathkit Tx/Rx were loaned for the occasion by Daystrom, Ltd., and in this shot the operators are G3CEG (nearest camera) and G3PME.

the Cornish group think they would have done much better as regards numbers if they had been able to announce the full programme sooner, they are nevertheless not dissatisfied with this first Rally venture.

* * *

This year's **Barford** Rally, held on **June 16** and laid on as usual by A.R.M.S. (no connection with N.A.R.M.S.) did not draw quite the crowd we have seen in previous years—this must have been because the day started with a threatening weather forecast; the afternoon turned out dull, with thin rain showers driving people to cover. The main programme having been got through by mid-afternoon, a general move towards home started about four o'clock, and by 5.0 p.m. the main car park was very empty. A rough estimate suggests about 900 people attended, with approximately 130 cars fitted mobile (the official count was not available at the time of writing). The talk-in stations were G3NMS on 160m. and G3NMR for two metres—unfortunately as it happened, they were both rather poor signals at semi-local distances and G3NMS in particular, instead of over-riding the QRM (which a control station must do to be effective) was buried in it. It is understood that about 60 /M's were worked on Top Band, and 15 or so mobiles on two metres. As always, the American authorities were most helpful and co-operative—Barford is a U.S.A.F. communications centre, the station itself being a war-time R.A.F. satellite airfield—and had even gone to the trouble of building additional "conveniences"; a detail was on hand to assist with parking, and the tidying-up afterwards. A great deal of effort goes into the Barford organisation, and it was a pity that the weather spoilt the occasion.

The A.R.M.S. mobile safety award (for which the judging was by two P.O. engineers) went to G2CCH/M, Barnehurst, Kent; the trophy for measuring the G3NMS frequency correctly was won by G3BMN/M, Halesowen, Worcs.; and other competition winners were G3KRC/M, Barnet ("flags") and G3FS/M, Sidcup ("lucky programme"). The U.S. 3rd Air Force Band gave a stirring performance, the Mayor and Mayoress of Banbury were present and drew the lucky-prize ticket, and the tombola turned out to be a great success. The A.R.M.S. committee responsible felt that even with the Wx against them the attendance proved they could draw a good crowd to their Rally.



The two-metre talk-in station for the Cheltenham Rally on May 26 signed G5BM/A. In all, fifteen 2m. /M's were worked.

* * *

FORTHCOMING MOBILE EVENTS

The fixtures remaining in the calendar for this Mobile Season are now as follows:

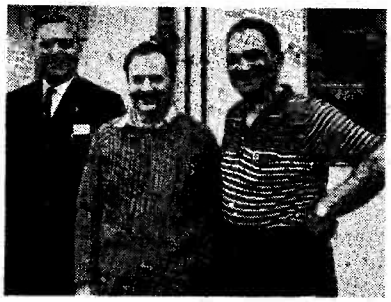
July 7: Harlow & District Radio Society Mobile Rally at Magdalen Laver, Essex. This is an annual event, but no advance details have been notified.

July 7: South Shields Mobile Rally at Bents Park Recreation Ground, Coast Road, South Shields, Co. Durham. The control station will be G3DDI, tuning 160m. band from 11.0 a.m. onwards and looking for GDX /M contacts for the award of a prize. Mobile events will include a driving competition and a transmitter test, commencing at 2.0 p.m. Refreshments available on the site.

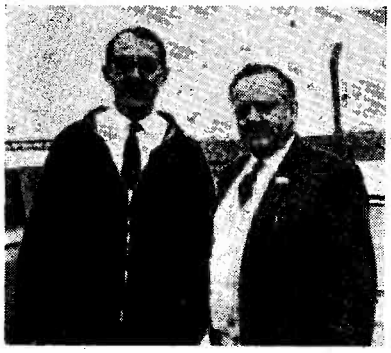
July 14: Chiltern Mobile Rally, West Wycombe, Bucks. Though no advance information has been given, this is understood to be "as last year."

July 28: Mobile Rally at R.A.F. Station, Stradishall, near Newmarket, Suffolk, on the A.143 between Haverhill and Bury St. Edmunds; there will be local A.A. sign-posting. Stradishall is an active R.A.F. station (No. 1 Air Navigation School) and the event has full Service co-operation. A very good programme has been arranged, with a long list of displays and demonstrations, including a static aircraft park with the aircraft open to visitors. There will be the usual awards and presentations appropriate to a mobile rally, and a big prize draw, for which nearly 100 items of radio and motoring interest are already listed. There will be a trade exhibit area, including radio equipment and car accessories; a continuous cinema show of radio, motoring and R.A.F. films not normally seen by the public; and a live ATV demonstration by the Cambridge B.A.T.C. group. An exhibition station will sign GB3RAF, opening at 11.0 a.m. for talk-in on both bands. Good refreshments will be available throughout the period of the Rally, there is ample parking space, and more than enough covered accommodation if the weather is wet—and (except for refreshments) the whole thing is absolutely free. Indeed, the Royal Air Force will be very glad to see you and your friends. Information and any further details from: Flt.-Lt. G. C. Moore, G3MCY, R.A.F. Stradishall, Newmarket, Suffolk.

August 11: Mobile Rally at the Royal Naval College, Dartmouth, South Devon, organised jointly by the Britannia Royal Naval Radio Club and the Torbay Amateur Radio Society. Talk-in will be by G6VJ on 1880 kc and by G5ZT/P on 144·1 mc. The prize competitions of /M interest will be for long-distance working to control *en route;* for the best home-built mobile installation; and the neatest and safest mobile rig. The R.N. College



Among those responsible for the Barford organisation for the A.R.M.S. Rally on June 16 were, left to right, G3KVF, G8KW and G3NMR.



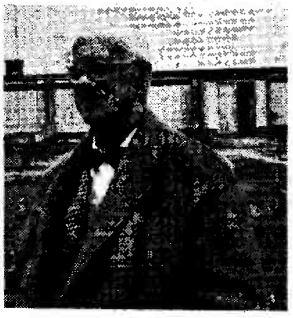
Saying " camembert " instead of " cheese " — left, Bill Biltcliffe, G6NB (Brill, Bucks.), and Maurice Mason, G6VX (Cheltenham). They were at Barford on June 16.

Well-known VHF man at the Cheltenham Rally — Tom Douglas, G3BA, who has two-metre /M gear in his Triumph "Herald," with a halo aerial. He is also one of those running Sideband phone on two metres from the home station at Sutton Coldfield.

G3JEQ (Leatherhead, Sy.) now has his /M equipment — for 160 and two metres — fitted in a new Morris Traveller, 9479-PL, the installation consisting of two inter-connected units mounted on the parcel tray. G3JEQ has had very considerable /M, /P experience, on both bands and through many of the rare counties of GI, GM and GW. His wife and daughter support him on these jaunts.

The High Wycombe chaps turned up at Barford in a mobile bus signing GB3BUS. The group includes G3PQH/T, second from right, and G3IUE, fourth from left.

G6UT of Bishops Stortford was at Barford — now in his 80th year, he is /M on Top Band and does his own operating.



Rally pictures in these pages from Cheltenham, Harewood and Barford.

will be open to visitors, with cadets (under training as naval officers) as guides, and one of the demonstrations will be of Civil Defence signals organisation and message handling; the local C.D. Unit will make the Rally the occasion for an exercise in emergency feeding—this means free-tea-and-eats from 12 noon until 4.0 p.m. Apart from that, there will be the usual refreshments on sale in the grounds, which are beautifully situated on the banks of the River Dart, with naval craft in the anchorage. The College is only a quarter-mile from the old-world town of Dartmouth, with its centuries of sea tradition. Needless to say there is ample parking space, and covered accommodation (with alternative arrangements for the entertainment of visitors) if the weather is wet. All local routes to the Rally are being sign-posted by the motoring organisations. All in all, this also promises to be a very good show. Any further information from: T. R. Ashby, G3NBR/G6VJ, R.N. College, Dartmouth, Devon, *or* E. J. Hayman, G3ABU, Torbay A.R.S., 113 Barton Road, Torquay, Devon.

August 18: Derby and District Amateur Radio Society Mobile Rally at Rykneld School, Bedford Street, Derby, will be much on the lines of previous years—this is a well-established event, and enjoys good support—with displays by the Police and Fire Brigade; treasure hunt, film show, Judo demonstration, radio-controlled model aircraft flying, trade stands and exhibits, a big surplus-equipment sale, and a draw for many valuable prizes. There is no admission charge, refreshments will be available on site, and parking space is ample. The programme starts at 2.0 p.m., and the talk-in stations will be G3ERD/A on Top Band and G3EEO/A for two metres, on the air from 10.0 a.m. The R.A.C. will sign-post the Rally all round Derby. Further details from: J. Anthony, G3KQF, Rykneld School, Bedford Street, Derby.

August 25: Reading A.R.C. Mobile Picnic (bring your own food and drink) at the Childe Beale Memorial Trust, Basildon, Pangbourne, Berks.

September 1st: Bucket-and-Spade party at Newton, Porthcawl, South Wales. Further details next issue.

September 8: Thames Valley Amateur Radio Transmitter Society's Mobile Rally at Polesden Lacey, near Leatherhead, Surrey—details later.

September 15: Lincoln Short Wave Club Rally and Hamfest—details August issue.

September 22: International Rally at Brussels, Belgium, for which temporary ON5 licences will be available to foreign visitors holding amateur licences—full details August issue.

And that's it for this month—except to say that anything of mobile interest to appear in the August issue of SHORT WAVE MAGAZINE must reach us by July 16.

IMPROVING EQUIPMENT LAYOUT

UNIT CONSTRUCTION PLAN

L. E. PROFAZE (G3KAB)

This article could well be sub-titled "Tidying-Up the Shack," for it describes and illustrates an attempt to produce items of amateur equipment quickly and economically by working to a constructional system. It should be emphasised that our contributor has only the minimum of workshop facilities, such as are available to most amateurs. Readers will agree that the results of his exercise are impressive, as regards both appearance and the modest cost involved.
—Editor.

THE construction, maintenance and operation of an Amateur Radio station necessitates the use of a wide range of test and ancillary equipment for such purposes as audio and radio frequency power generation, frequency and harmonic-level measurement, and modulation. Receiver converters, electronic key, oscilloscope and valve-voltmeter form typical examples of the more specialised devices required. Much of this equipment can be obtained commercially, but as this can be expensive, the home-constructor is thereby denied some of the satisfaction of the hobby and, as each manufacturer has his own ideas about the dimensions and shape of his products, it is often difficult to achieve a uniform layout. Moreover, test-equipment remains idle during much of its life but still requires storage space, which is usually at a premium in a small suburban house or flat.

Again, equipment produced by the average amateur often lacks professional finish, for he rarely possesses all the essential facilities for this kind of work. It is true that some achieve a very high standard but it is suspected that they are not always restricted to the corner of a bedroom as a workshop.

Lastly, time is an important factor, financial considerations often preclude the construction of many of the interesting circuits which appear in the journals, and test equipment always seems essential to the task on hand as soon as it has been rendered unserviceable when, for reasons of economy, some of its vital parts are removed for use elsewhere.

Need For Standardisation

The writer, being principally interested in experimental and constructional work, came to the conclusion after surveying his efforts of the past few years that, if his future plans were to come to fruition in a reasonable length of time, a less

expensive, haphazard and time-consuming method of equipment production must be adopted than hitherto. A standardised-unit form of construction seemed the obvious alternative and of several schemes considered the well established double-sided rack was chosen, because it is simple to build and can accommodate a large amount of equipment in easily accessible fashion and it occupies little floor space. The result is shown in the photograph here.

Narrow Dexion "angle" forms the supporting structure and the chassis are made of tin-plate (which happened to be available in quantity) but aluminium may be preferred here for its greater rigidity. The overall height of the rack is five feet and the base measures 14 inches wide by 12 inches deep. The two faces of the rack are about five inches apart and the chassis, one of which is shown in the other photograph, measure 14 inches by three inches by one inch. The choice of dimensions is likely to be influenced by local factors especially where transistor circuits form the principal interest.

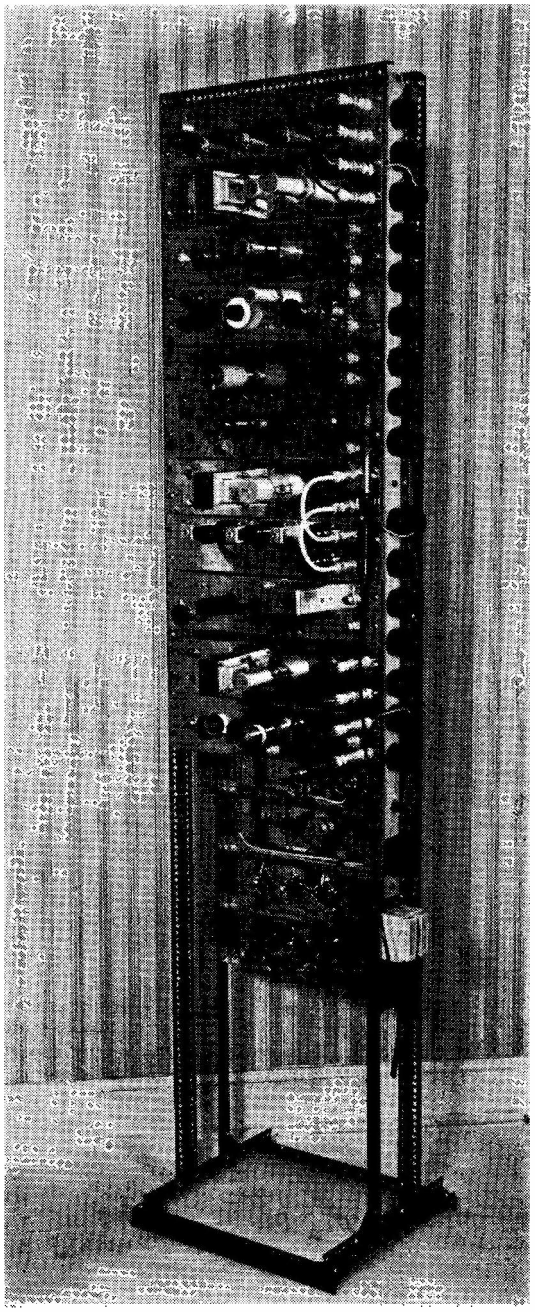
Interchangeable Units

Many circuits, used by amateurs, consist of only one or two stages, the crystal-controlled sub-standard oscillator and frequency-divider being typical, with power requirements well within the capabilities of the small instrument mains transformers now available for about 12s. each. It is expensive and often unnecessary to provide each piece of apparatus with its own power supply; thus a number of small units using these transformers to produce 200-250 volts DC at 40 mA have been introduced at intervals along the rack and are connected electrically to the equipment, as desired, with short lengths of TV-type coax terminated with plugs, each chassis being provided with matching sockets. This is a convenient and relatively economical method of interconnection and though the use of one type of socket for many different purposes may be criticised, wrong connections can be avoided by adopting a system of colour-coding using the paints which are available in small quantities for model makers, or with strips of coloured adhesive plastic tape on the body of each socket. Painted lettering, or that available in the form of transfers, may be preferred by those with the patience and skill necessary for the work.

With the exception of TVI-proof transmitters, extensive overall screening is seldom needed in practice. Well ventilated cabinets which perform this task efficiently can be obtained commercially but as "one-off" orders they are likely to be expensive. No electrical interference has occurred between adjacent units even from the mains transformers, which were expected to have a strong leakage field, but sensitive circuits can be protected by careful choice of position or by judicious screening.

Complex circuits, such as receivers or oscilloscopes, are suitable for sub-division into a series of individual units. Table I, p.248, shows a typical receiver and/or transmitter plan for unit construction.

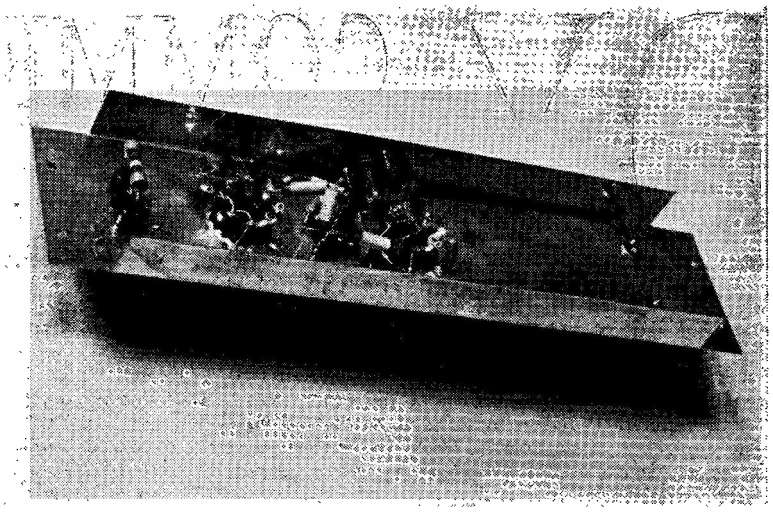
The first item may take the form of tunable or crystal controlled converters, with several IF amplifiers each having different operating frequencies and selectivity characteristics, with which to build up



General appearance of the rack-panel layout used by G3KAB for the unit construction of equipment. Dexion angle forms the main frame and in his case the spacing between uprights accommodates a panel 14 in. wide. The height is 5 ft. Dimensions may, of course, be varied to suit individual requirements, remembering always to provide sufficient base area for stability.

simple or multiple-stage receiver combinations. A low-power audio amplifier should be given high priority as it will be found useful on many occasions. It is worth remembering that an SP61 or similar valve delivers enough power of reasonable quality to a small loudspeaker to be effective in an average-size room.

The photograph shows the assembly at an early stage of development. The power units have since been modified and now each includes a stabiliser valve so that either 150 volts or 105 volts can be obtained in addition to the full unstabilised output voltage. To facilitate measurement of current from the power units, and elsewhere, several chassis support moving coil meters of various full scale deflections ranging from 1 milliampere to 150 milliamperes. Each meter is provided with two sockets and a toggle switch to reverse the connections without disturbing the connecting cables. The small loudspeaker, formerly located on the audio amplifier chassis, is now situated above the strip of mains sockets and can be introduced into circuit *via* a standard socket. It can be switched out and a resistive load substituted by means of a double-pole change-over switch.



One of the standard chassis for the rack-panel assembly, shown in the other photograph, as described by G3KAB in the accompanying article. It is no more than a U-shaped dish, to the required dimensions (in this case, 14 in. x 3 in. x 1 in.) with flanged ends for fitting between the Dexion angle-uprights of the rack. The material can be either tin-plate or sheet aluminium. The available mounting area will accommodate all the circuitry normally encountered in unit construction, but heavy iron-cored components such as are needed in power packs and modulators should, of course, be carried on shelves at the bottom end of the rack.

The radio equipment is not described in detail for there is nothing special about it and its function will depend upon individual requirements. As shown there are a number of experimental receiver units, power-packs and the audio amplifier, while on the reverse side are circuits related to the transmitter.

General Conclusions

Those who find cost a burden (and who of us does not !) may be sceptical, but despite its appearance the whole basic structure including the mains supply components came to about £5 only, and if the equipment is constructed to meet specific needs, as they arise, it is very unlikely that the normal budget will be exceeded.

The enhanced progress achieved with this form of construction, in comparison with other methods, is largely due to the ease with which a small unit can be handled ; success with part of a large project is often a greater incentive than many weeks spent upon a complex task before reaching the testing stage. Occasionally, one discovers an alternative or additional circuit too late for it to be integrated into a scheme which has reached an advanced stage of construction, but the system proposed in this article often allows the introduction of an experimental item, built on its own chassis. If this is ultimately rejected, reversion to the original circuit is merely a matter of unplugging a few cables and discarding a chassis, which being of such simple form and cheap to produce may be regarded as expendable when its task is completed. There is also great satisfaction in having everything to hand, especially at a time when an experimental session reaches that extreme stage of frustration when one is tempted to hurl the chassis against the wall !

TABLE I

Receiver Construction by Units

(a) Radio frequency amplifier and frequency changer.
(b) Intermediate frequency amplifier and second detector.
(c) Audio frequency amplifier and output stage.
(d) VHF or HF-band converter, pluggable to (a) or (b).
(e) Power supplies for each of the above.

Transmitter Construction by Units

(1) Aerial Tuning Unit, metered.
(2) RF Power Amplifier stage.
(3) Clamper or Gate Modulator for PA.
(4) PA Driver stage.
(5) Buffer Amplifier or Frequency Multiplier.
(6) VFO-BA, or VFO-Xtal Mixer with buffer stage.
(7) Speech amplifier up to mod. driver stage.
(8) Modulator Unit.
(9) Metering and primary switching circuits.
(10) Power packs.

DX COMMENTARY

L. H. THOMAS, M.B.E. (G6QB)

AS various researches show this to be the 200th of these monthly commentaries written by your present conductor, it might be interesting to take a quick look at No. 1, which appeared in October 1946, and to see how far we have come since then.

After a period (roughly the first six months of 1946) when we in the UK were licensed only for 28 mc and 1·7 mc (yes, 1715—2000 kc), we were gradually handed back the bands, and by the time of G6QB's first "DX Commentary" we were using 3·5, 7, 14 and 28 mc for DX. The 28 mc was wide open, and since most of the early re-starters had been forced to use that band or nothing, there was a lot of activity there. One couldn't call it QRM—even on 14 mc there was none of that, for the number of stations on the air could not have been much more than one per cent of to-day's total.

G2PL had passed the 100 countries mark; nice pieces like AC3SS, ZK1AB, K6HOT/KC6, W7AKR/KGS and quite a bunch of Chinese nationals were being worked (even on 28 mc). The 3·5 mc band had fetched out a lot of Old Timers, many of whom, we are sad to say, have since passed on. And, turning over the pages, we note that there was quite a lot of interest in "Five Metres" (the 56-58 mc band), which explains how it is that there were no precautions against TVI in the various published designs of the time. We didn't even know what it was—or was going to be!

In short, DX was dead easy with the simplest of gear, and there was hardly any competition. G6QB's own rig of the time was a crystal oscillator, two doublers, and a PA with two PT-15's in push-pull. This energised a 33-ft. Windom about 40 feet high and really worked the world, particularly on 28 mc, where 135 countries had been collected by the end of 1947. Just imagine that nowadays!

Almost any afternoon one could work a string of W6, W7 and VE7 stations on phone, and reports were usually "9 plus 20" or better. No pile-ups, no rat-race, no SSB, very few VFO's; no signals at all from most of the short-skip countries that now plague us. The "new boys" were G3A - - 's and not one of them was even mentioned in the DX'ing line. Hard to believe that most of those fellows are now being looked on as Old Timers. . . .

And, in case your reaction to all this is that DX'ing in 1946 must have been absolute bliss, let us shake you by commenting "How dull it all must have been." No stimulus towards improvement in receivers or transmitters or aerials—just sit back and work the stuff with your 807! No TVI, no QRM to speak of—Amateur Radio would be in a really stagnant state by now if the circumstances had not arisen which forced us to wake up and do something about them. However much you may loathe the present-day QRM and intense competition, there is no doubt that we have gone a long way to meet it. And the mere fact that one can still work rare DX, with 330,000 amateur stations in the world and conditions which are supposed to be poor, shows just how far we *have* gone.

Shall we (or our successors) be making similar remarks in another 17 years from now? It's nice to think of someone looking back to 1963 and saying "Ah, my boy, those were the days! No QRM to worry about. Why, some people were actually using AM phone in those days and getting away with it. And the DX was so easy that unless you had worked more than 300 countries you were just a novice!"

DX Gossip

No shortage of DX-peditions, DX-otics and the like this month, although conditions have been noticeably down on the April-May peak. VR1N (the Hammarlund expedition) came and went, and VK9BH, their second effort, is just starting up as this is being written. Gus, W4BPD, after a brief rest in Kenya, did some noble work from FL5A, then from VS9ASS (Aden) and on to Kamaran as VS9KDV. The Willis Island fracas (VK4HG and 4WV) left more frustrated callers hanging around than any previous DX-pedition, and VQ8BFA (Agalega) was also a difficult one to work. Christmas Island (VK6ZS/9) is under way as this is written; VR2BZ/ZM7 (Tokelau) has been reported active. In short, if you want something exotic, all you need is a good receiver and all the time in the world.

CALLS HEARD, WORKED and QSL'd

In case you don't know where Parece Vela is, its other name is Douglas Reef (20°N., 136°E.), roughly 600 miles from Iwo-Jima. HL9KH operated thence with the strange call-sign of KG61D (yes—KG sixty-one D!) and made 2400 QSO's on CW in some thirty-three hours' operating . . . EA1FL/Ø was on Annabon Is., but unlikely to count separately from Spanish Guinea . . . JT1CA, putting out SSB from Mongolia, was UA3CA.

Other DX-peditions that happened (or will have happened before you read this) were LX3AA, M1QJ (by ON4QJ), PX1IK (by HB9KU), VK2ADC from Lord Howe Is., and 3A2CZ (by ON4QX).

Coming up are the following: PX1MO and PX1QX, run by F2MO and F2QX, August 31 to September 7, all bands, AM and SSB . . . GC2HFD/A, from Alderney, all

bands (including Top Band), August 10-30; mainly 14 mc SSB and CW . . . A sortie to Albania by YO3GK, YO3ZA, SM5BLA and UA3CR—some time in July. For other possibilities see "DX News from Readers," further on.

More Prefixes

One or two readers who have grumbled about recent prefix changes are in for more shocks. Here are the latest: 6W5 is the new one for Western Samoa. 6N5 is an additional one for South Korea (6N5X is the former EP5X); TM1 is reported the new one for the Republic of Indonesia, but no activity as yet; 9A1 is now being used for San Marino, as well as M1. Also heard, PM1XX on " Kingman Reef " —most probably a phoney.

How many of these phoneys and suspects are caused by bad copying we shall never know. But we gather that a gentleman calling " CQ de TR8T " turned out to be actually sending " CQ Detroit!"

DX-pedition to Corsica

A big-scale sortie to Corsica is being run jointly by Hammarlund and K.W. Electronics Ltd., from July 4-18. Two separate stations will operate on SSB and CW, and the crew will be MP4BBW, DL9PF, HB9TL, W2BIB, W2BBV and W9IOP—a pretty formidable bunch of operators. CW will be on 21100, 14002, 7002 and 3510 kc, listening 10 kc off. SSB will be on 3960, 7095, 14125 and 21400, listening on 3805-3810, 7205-7210, 14320-14350 and 21420-21450 kc . . . so, if this is adhered to, European SSB contacts will be impossible on the first two bands and difficult on the other two.

Hammarlund and K.W. equipment will be used, together with Hy-Gain beams and Electro-Voice microphones. QSL's to Hammarlund, Box 7388, General Post Office, New York 1—or s.a.e.'s on IRC's needed.

The Willis Island Story

VK4HG and VK4WV have been on regularly from this rare spot, 7050 and 14100 kc, but apparently neither of them has had any previous experience of pile-ups, and on one occasion many CQ's from them produced only three QSO's within two hours! Apparently they were using an old modified broadcast receiver with no bandspread, of all the things to have in a " rare " country. . . .

Now it seems to be confirmed that VK4BJ and VK4WH are two new operators who are going to be there, and also that VK4JQ went there, early in June, with a Swan transceiver, proposing to work on 14120, 14130 and 14140 kc SSB, listening 14180 and up. He will be there for one year, so don't panic. There was also some talk of VK5AB making a 72-hour trip.

DX Gen. from Readers

From VK2AGH: Further to the Willis Is. story, above—VK4JQ is ex-G3DYD, VR3N, JZØPC and VK2AVU. His Swan transceiver is for 14 mc only, and for CW he has crystal frequencies of 14024, 14040, 14050, 14080 and 14100 kc. He hopes to be as active as possible but will be limited by commercial skeds, fuel and so on. QSL manager, W6HYG. And VK2AGH adds that the recent pandemonium has brought out the worst manners he has ever heard in his 35 years of operating.

From GI6TK: Confirms the above. Also that VK3AHO will be in Nauru, signing VK9BH, for two weeks from the last week in June. And he also tells us that Mac, VP6WD (ex-G2WD) has been in hospital in London for a serious operation, but hopes to be back in VP6 by late July.

From GW3AHN: The Parece Vela operation by HL9KH, signing that strange KG61D, will not count as a new one being only 500 miles from Iwo-Jima (but some later sources have quoted it as 600!) . . . VR1N was not received too well in Europe . . . If VK9BH is not successful on Nauru, he will leave the equipment for a time with the resident VK9AM; otherwise he will take it back with him . . . JT1CA will continue from Ulan-Bator for four or five months (14110 and 14116 kc SSB) . . . PY4AS/Ø should be on from Trinidade Is. by now.

From G2DC: " All the current DX-pedition signals have come up to scratch, and have been there, workable, just when one expected them to be. TI9RC, FL5A, KG61D and VQ8BFA have all been good workable signals (provided one could read Harvey's Morse from the last-named!) Peter, ZS6LM, is due on Christmas Island June 19-20; will be using a KWM-1 and SX-117; main frequencies for CW 14003, 14010 and 14053; SSB 14120 and 14295 kc. Call will be VK6ZS/9, QSL *via* KV4AA, and if all goes well he will stay there three weeks."

All About Contests

The debate on Contests continues with undiminished ferocity. Last month, concluding a paragraph concerning the small number of logs sent in for the *CQ* affair, we wrote " not everyone wants to impress his friends by demonstrating his ability to swap numbers at higher speed than they can." G2DC took violent exception to this remark, and we hasten to apologise and to explain that we were *not* getting at him or at G4CP (the only two stations mentioned in the preceding paragraph as having done well).

G2DC writes " I enjoy contest work, in fact I plan in many ways for some of the major international contests, well ahead, and each year try to improve equipment and aerials, to improve results . . . any small success obtained is a source of satisfaction and re-kindles the desire to improve. In fact it is the beginning and end of Amateur Radio as far as I am concerned, to make equipment for competitive work, to try and improve all the time . . . I also see that my old friend GW3AHN has some very queer ideas, and if he thinks that an international CW contest can be easily won by an amateur who is incapable of copying plain language for five minutes, then I invite him to have a go in the next contest. He would find as much chance of such an operator winning as there would be of working 300 countries on 25 watts!"

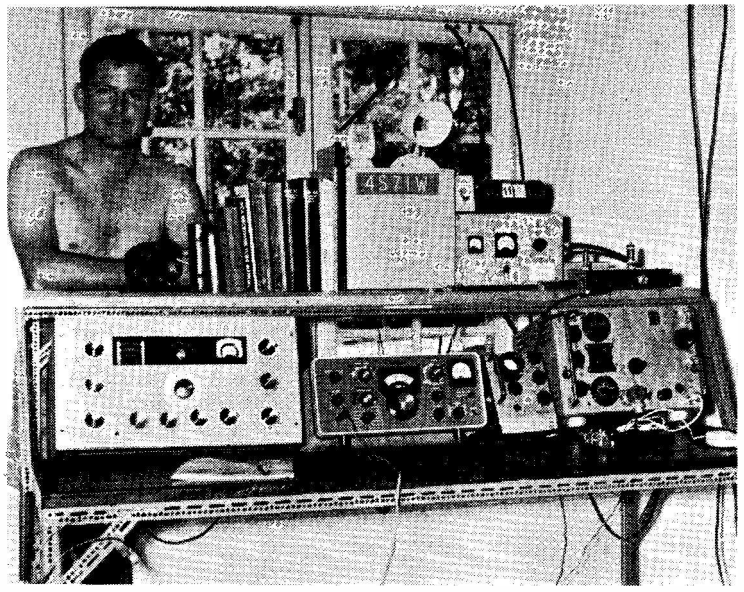
G3BID says "I support GW3AHN in his comments. The contest business is hopelessly overdone; it is absurd to claim that a majority of operators want them. I believe it is a small but very vociferous minority." (And he goes on to demonstrate, with figures and pretty good reasoning, that there are probably at least 37,500 *active* amateurs on each mode, CW and phone, compared with a log entry for the *CQ* affair of less than 1,000—not much more than 2½ per cent.)

G3HDA writes "I just cannot agree with GW3AHN's remarks . . . you don't have to *win* or stay on the full 48 hours to enjoy a contest. They give an opportunity to work new ones, and the QRP boys stand as good a chance as the others. Surely one of the interests of this hobby of ours is its scope and variety —LF, HF, VHF, /P, /M, /T and so on. So it's natural that we don't all like *all* the angles. The competitive element will always remain —it's human nature." He also adds that anyone without CW proficiency couldn't possibly win a big one—you only have to look at the results to see that the top scorers are top operators.

G3IDG thinks mere exchanges of number-and-letter combinations are "futile" and says how much nicer things would be if we were all interested in the other fellow as a person, and sought to find out a little about him.

One point of agreement—*everyone* thinks there are too many contests, including G2DC, who adds "but there are plenty of bands open during contest week-ends, and, with the exception of the USSR tests, when the bands are made almost unusable by crude signals, lots of DX signals still to be winkled out."

Let's drop it there for the time being—it will come up again, as major points of argument always do.



Station of Ian Wollen, 4S7IW, Cannavarella, Namunukula, Ceylon, who has been a tea-planter out there for the last 14 years (and a reader of "Short Wave Magazine" since he was a schoolboy). Licensed in 1961, he went through the CO/PA, DX-40U and AM phone phases, and now runs a KWM-2 (centred in picture), with an AR88LF for general coverage (left), and a modified TCS-12 (right). Other equipment includes a xtal calibrator, modulation monitor, Tx dummy load, and a QRP job for 40m. local working. The aerials now in use are a 20m. G-P and an FB5, but a 3-ele beam for 20m., at a height of 60 ft., is in hand. Apart from producing the "4S7 Bulletin," main interest is 20m. DX phone, and 4S7IW (who is at the moment the only station in Ceylon on SSB) is always on the look-out for U.K. stations, and is glad to give anyone a new country on this mode.

Around the Bands

With six bands well and truly on the go, there's something for everybody still. Not much DX on One-Sixty, but the population still stirs . . . Eighty is mostly given over to short-distance rag-chewing, especially by AM phone users, who would be sorely pressed if it weren't for this band. Twenty and Fifteen, all the DX, much as usual. And Ten, thanks to terrific outbreaks of Sporadic-E, has given a lot of newcomers a thrill.

Top Band Doings

G3RRU (Greenford) has jumped to 79 counties worked, thanks to a welter of portables in GM and GW, also GC3AEF/A in Alderney. But he says "who can blame stations for moving off this band when there's so much DX to be worked on the HF bands?"

G3IDG asks "what constitutes 'daylight' for Top Band QSO's? It could be as elastic a term as 'DX'." And to G3OLN, who remarks on the lack of certificates for this band, he recommends the good old WAC!

GM3OGJ, signing /A, will be active from Kinross for about three weeks, starting July 8. CW only, 2200-2300 GMT, between 1810 and 1890 kc. QSL's to the RCS Bureau, c/o 7 Southpark Terrace, Glasgow, W.2. (Operation will be from the clubrooms of the Scottish Gliding Union, Portmoak, by Scotlandwell).

G3REA (Warrington), who now heads the appropriate ladder with 80 counties, swapped from a quarter-wave aerial to a three-quarter-wave dog-leg affair and thinks things are now better. He hopes to try a half-wave with the centre 40 feet high, in the autumn—present height is only 25 feet.

Top Band from Overseas

ZE3JO (Salisbury) says he has used the band a lot, despite bad static, and has worked every station he has heard (VQ2, ZS2, 4 and 6). ZS2 is about 1000 miles, and even ZS6 is on the 700-mile mark and would be a good contact (relatively) for the average G. He has listened early mornings, when the static is practically nil, but has heard nothing at all. Best times for the band are around 9 p.m. (1900 GMT).

G3NYQ was in Malta during early June, with a TW Topmobile. At 2200 GMT on NFD he heard G6VC/P (599), G3GRL (589) and lesser signals from G2BP/P, G5FA/P, G2DU/P, G3FCY/P, OK1QM and OK1ZC. G stations were heard on half the nights he listened (and that with a 40-foot indoor aerial).

G3PLQ (/MM) logged G3GRL from just south of Gambia (229 at midnight). He is now doing the rounds again, returning to the U.K. around July 17. He hopes to meet EL4A and has written to ZS1AB for a list of ZS's who are interested in One-Sixty. On the listening side, static, as always, has been his main problem, not to mention a hurricane in Freetown, when 8½ inches of rain fell in fifteen minutes!

[over

Twenty Metres

We can skip Eighty and Forty altogether this month—no one even mentions them! But Twenty has been as good as ever, if a little crowded, and the short skip has been *murder* at times.

We will take *SSB* first. On this mode G3BHJ raised KR6's, PJ2AF, VS9ASS, YV5AFF and sundry USSR prefixes . . . GM3JDR's list (not quite so long as usual) includes three CP5's, EP2AW, ET3MEN, FP8's, FL5A, HL9TB, JA, JT1CA, KG4BR, KM6BI, TI9RC, VP5LG and ZD6HK.

GW3AHN worked CE3DH, CR9AH, DU1AA, FL5A, HS1B, JT1CA, KH6's, KJ6BZ, W4EIL/KS6, PX1OAC, TI9RC, VKØVK, VP5LG, VQ8BFA, VR1N, ZK1BS, ZL1ABZ, 4S7IW, 5U7AH, 9L1RO and 9M2DQ.

G3DO just mentions some new ones—JT1CA, FL5A, VR1N and VP5LG. VQ8BFA (on CW) was yet another . . . GI6TK raised JT1CA, VQ8BFA and CP1BH . . . G3HDA worked CR9AH, JT1CA, VP5LG, VR1N, VP4TI and DUØDM. Finally, G3NOF netted CP1BH (0047), 5EQ (2345), EP2AW, FG7XT (2155), FL5A, HI8AKU (2305), HL9TD (1800), JT1CA (1800), TI9RC (2220), TU2AK (2000), VP5LG, ZS7R (1800) and 4S7IW (1700). He says that VS1, KR6, KG6 and JA stations are frequently heard around 1700-1800.

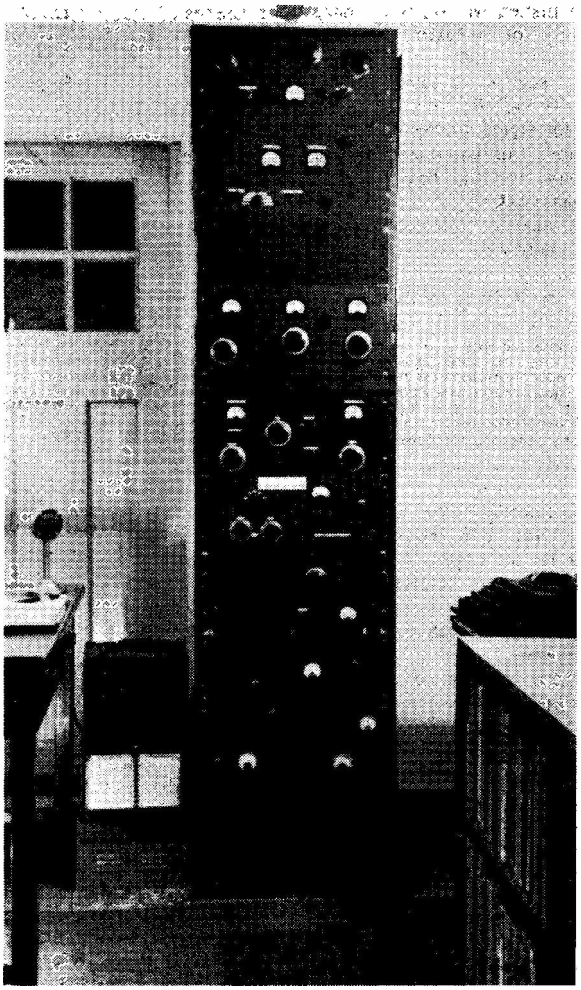
Going over to *CW*—G2DC keyed with FL5A, TI9RC, VK6ZS, VQ8AI, KG61D, KH6 and KL7 . . . G3RRU, with 30 watts and a long wire, worked VP8GQ, FL5A, 6O1ND, PY, YV, KA, ZE and many W6 and W7's . . . G3RDC (Pett) made it with 5N2JKO, F2CB/FC, ST2AR, 6O1ND, FL5A, VP8GQ, CP5EZ, CR7IZ, VQ's and ZE's, VK, and W1-Ø.

G3HDA worked FL5A, TI9RC, KG61D, VQ8BFA, VR1N and VR6TC—all the rare ones! G3RFE selects EL2Y, FP8CB, KH6's, VP7NT and VQ9HB. G3RFS raised TI2WD (2235), 9Q5AB (1830), CE1AD (0710), ZS7M (1940), VS1LJ (1730) and ZP5OG (2320).

GW3AHN, though mostly on SSB, worked CW with FL5A, KG61D and VQ8BFA. G3KMQ, much beset by TVI, concentrated on the late hours and was rewarded with FR7ZC/J, ZD6OL, CR9AH, VP7NQ, BY1PK, FM7WA, ZD3A, FL5A and TG9AD—with many other Caribbeans and South Americans. He remarks on what a thrill it is to have a rare one come back to a CQ or a call to a lesser DX station who doesn't answer. This happened to him with ZD3A, whom he had been trying to raise in the past without success.

GM3JDR—who is mostly on SSB—swapped CW with FL5A, KG61D, JA's and KA's, UAØKQB and ØSU.

G3GDC is again our only representative on AM for this band. His raised 9M2GF, KR6OF, VP5DB, VE7 and 8, TI2HK, VK3MO, YS1MM, TG9MP, 9G1EC and 5N2SMW. He uses a pair of TT21's modulated by KT88's to a two-element beam, and is in the rare position of having another active amateur (G3KHU) as—next-door neighbour!



The rack-panel layout at G3FGT, Shirley, Birmingham, incorporates gear for all bands 2-10-160m., CW/Phone and PSU's, and apart from the BC-221 (lower left), all the equipment, carried on nine chassis, is home-built, including the Rx. The latter, though not shown here, is of special interest; it is fully bandspread and calibrated through all amateur ranges and is fitted with six half-lattice xtal filters, three for phone and three for CW, involving 12 xtals in all. For the ultimate in CW selectivity, both filters can be switched in; QRM then ceases to exist! Aerials at G3FGT are two 260 ft. wires, 50 ft. high, at right angles (N-S and E-W) and combined HF/VHF rotary beams. The main interest is CW DX on Top Band and Twenty.

Fifteen Metres

G3BHJ, on SSB, worked CR6CY and 6FY, VQ4AA and ZP5JE . . . G3NOF, same mode, found little coming through during the day, but raised KP4AOO, KZ5LC and some W's . . . G3HDA made it with PJ2CE and ZP5CN on SSB.

The AM mode still fetches them in on this band, as instanced by G3PMR, who heard HC2RM, 9G1DM, CR6FN, 4X4, 7X2 and YV and wished he had a transmitter on the band to raise them with! G3NWT found that Fifteen, late at night, was " a hive of succulent prefixes," such as HC5, HP3, OA9, HR1, FG7, PJ2, YN9, VP2S and the like. He worked VQ1MH, FG7XN, VP7NX, 6YALT, VP6ZX, 5H3HZ, 5X5IU, HI8NOG, 9K2AD, CE3's and VE8's—all on AM.

CW activity on the band has fallen off sadly, but G2DC raised CR6AA, CR7IZ, FL5A, VP2VB/MM, VQ8AI, VP8GQ, ZD6OL and 5H3HD . . . G3HDA was lucky enough to find KG61D on CW (rare for this band) . . . G3RFE worked CW with EA8, EP2RH, HK3RQ, LU, PU, YV, VP8GQ, VP9FC, 4S7EC, 9M2AC and 9Q5TJ . . . GW3AHN keyed with FL5A and 9M2UF . . . G3PPR found excellent signals from YV, HK, VP7, VP9 and the like, around 2200 GMT. He worked 9K2AD and EP3RO.

Ten Metres

The tremendous outbreaks of Sporadic-E have attracted some attention to Ten this month, and there has even been some fairish DX at times. GW3AHN raised Gus (FL5A) on CW; G3NOF even heard a few weak W's around 2300, and on AM he worked CR6FJ, ZE1JE and 8JF, 5N2CKH and 2JKO, 9G1DM, CN8, 5A and Europeans.

G3IDG heard CR7IZ, VQ2WR, 4X4WF, 5B4OS/P, 5H3IW and 9Q5AB, and says that DL7AA reported working 37 countries on the band in the past few weeks. G3IDG himself heard 32 countries during the month, with 24 on CW; he worked 9Q5AB for a new country, as well as many Europeans.

Operating Notes

G3NWT writes: " Get the omnibus pseudo-QSO, evidence of higher rubber-stamp costs in Nicaragua. The formula—call 'QRZ?' for half an hour and repeat 'There are so many stations calling I cannot possibly copy anyone. Would all of you please send a QSL to this P.O. Box, and I will send one in return. QRZ . . . ' During this performance I actually heard the station name an I1 and tell him to QRX. Half an hour later he was still calling QRZ?"

Also from G3NWT: 9Q5PB accompanies his CQ's by soliloquies on the piano, and an F3 calls (on AM) by whistled MCW, with sharp in-drawings of breath between repeats.

G3PPR says " Another bright boy was OK1KUR, who, on being told that his signal was quite strong but almost unreadable, replied 'Thank you for the fine business report, please your QSL'."

G3PPR also comments that he notes the activities of the Society for the Mass Alteration of Prefixes is at it again. (Unfortunately this is something we can't avoid. It happens because we live in an Age of Change, and the amateur population of most countries is hardly vociferous enough to persuade their governments against pressing for independence or a change of status!)

ZE3JO remarks that 7 mc, out there in Southern Rhodesia, is very good for W's, especially at sunrise, but adds " You just try and work some of them in among the Red Army Choir!"

G3BHJ noticed that JT1CA " created some most fantastic mis-operating from desperate DX'ers." Many of them were anxious to inform him that his call was JT1CA and that he was located in Mongolia (occasionally omitting their own calls in the excitement of doing so). And when he announced that he was tuning for calls *not* on his frequency, he was promptly obliterated by zero-beat calls, with many yelling frantically while he was transmitting. It's just the same old story, and we doubt whether these people will ever learn. (But the DX man's operating counts for a lot, and Gus's superb technique shows how the menaces *can* be dealt with).

Indoor Aerials

Last month G2DF remarked on his DXCC with an indoor aerial, and wondered whether it was the first of its kind. G8PL writes to say that he holds DXCC No. 570, dated July 1949, which was secured entirely with an indoor wire; and he adds that this is the only type he has been able to use since the war. Up to two months ago he had a bent-up dipole right inside the room with him, but he now has a top-floor flat and access to an attic. He is thinking of using two V-shaped dipoles and feeding them in and out of phase. (Recent DX has included KH6, KR6, OA, PJ, ZP, TT8, VK3—and G8PL only needs twelve more U.S. counties for that coveted USA/CA Award.)

G2HFD, too, remarks that he has found indoor aerials " no

TOP BAND COUNTIES LADDER

Station	Confirmed	Worked
	CW and Phone	
G2NJ	98	98
G3OIT	93	96
G3LWQ	93	93
G3NPB	91	92
GM3KLA	87	89
G3OLN	86	92
GM3PBA	85	86
G3PLQ	83	89
G3JFO	82	84
G3LHJ	79	84
G3REA	77	80
G3OWR	77	80
G3OXI	76	82
GM3IKD	67	60
G2BP	51	54
G3OLU	50	54
G3IDG	50	53
GM3PPJ	40	52
G3HZL	25	52
	Phone only	
G3FS	86	86
G3NPB	83	83
G2NJ	49	49
G3OWR	41	54
G3OLN	36	49
G3LHJ	27	31

(Failure to report for three months entails removal from this Table. New claims can be made at any time.)

disability at all." Using his Viceroy, he has worked 131 countries in eighteen months, and has 110 confirmed on two-way SSB.

Predictions and Propagation

WWV's daily figure continues to be well ahead of the predicted figures, but doesn't always seem to be reflected by actual conditions. For instance, the *CQ* predictions gave a depressing "3" for June 17, and "4" for June 18. On both of these days WWV was sending "N7" . . . but, despite this, the North Atlantic path seemed to be pretty poor compared with the previous few days.

However, there is no doubt that the general level of DX conditions is much better than we should have expected it to be, having regard to the sunspot activity (or lack of it).

G3NWT, with his 12-in. Newtonian telescope, reported "a beefy groups of sunspots which looked to be about 20° off the equator." He wonders whether the new cycle may not be due to start, within a matter of months.

Intruders

As if we haven't enough to put up with already, there seems to have been another determined invasion of the CW portion of the 14 mc band by teletype stations. One settled on about 14030, and another was active for some weeks around 14075, later moving to 14060 kc. We have often wondered how many assorted amateur signals, from all directions and distances, it would take to spoil the channel for one of these pirates. At any rate they give everyone a couple of ready-made spots in the band for their tuning-up operations. We should all do it on principle, and with the co-operation of a few California Kilowatts fed into efficient beams—who knows?

There are times when these stations, obviously high-powered, are much weaker than amateur signals coming from a completely different locality; these conditions might well prevail at their receiving sites as well. Once they find that the amateur bands are not necessarily soft beds where they can recline without any pin-pricks, they might pack up and go. Certainly we don't want them . . . forward, the giant-killers!

Late Flashes

Gus was going great guns from Kamaran (VS9KDV) from June 19 onwards, with VS9ADV also operating from the island; this will hardly be a rarity any more, with this sortie following on the fine one by the R.A.F. types eighteen months ago . . . W9AAC/PK (also heard as W9AAC/TM1) seems a possible phoney . . . VP2VB/MM (Danny Weil and *Yasme*) arrived at KZ5, June 14-15 . . . LXØAA and ØAB, July 20-22, will be operated by ON4QX and the Antwerp gang. Two-metre operation also possible . . . Trinidade Is. (PY4AS/Ø) will be mainly on SSB, June 25-July 20 . . . Christmas Is. (VK6ZS/VK9) delayed a few days and should now be on until July 10-12.

Glorieuses, Tromelin and Europa, the three rare ones activated by Gus (FR7ZC) will all have permanent resident amateurs some time this year . . . an Albanian sortie by the ON4 boys is a bare possibility, instead of the Luxembourg stint.

Sign-Off

And now, as we sign off for the 200th time, we must pass our thanks and acknowledgments to the *West Gulf DX Club*, to W4KVX's *DX*, to *Electronics Journal* (formerly "Western Radio Amateur") and, of course, to all our correspondents who keep us so well supplied with up-to-the-minute news. Next month the calendar brings us to another early deadline—it is **first post on Monday, July 15,** and that is absolutely final. Address everything to "DX Commentary," *Short Wave Magazine*, 55 Victoria Street, London, S.W.1—and don't be late! Good Hunting, very 73 and—BCNU.

FIVE BAND TABLE

Station	Countries Worked	21 mc	14 mc	7 mc	3.5 mc	1.8 mc
W6AM	321	87	316	59	30	8
G2DC	313	273	292	149	102	14
G3DO	309	223	296	64	73	10
G3FXB	307	270	277	163	104	9
G3FPQ	296	256	269	139	113	26
G3NOF	245	184	200	23	33	2
G2YS	208	130	184	99	75	22
G3KMQ	208	77	187	65	47	13
G3LHJ	206	139	174	54	24	12
G3HZL	187	125	159	94	52	11
G3IGW	184	127	132	102	53	28
G3BHJ	180	165	80	29	18	1
G8VG	179	87	159	86	38	12
G3NFV	172	122	102	44	57	17
G3PEU	154	72	134	22	26	4
G2BLA	153	99	100	77	40	10
G3JVJ	129	77	89	72	41	4
G3RFE	101	68	56	4	24	1
GW3CBY	100	32	80	54	36	19
G3PEK	95	36	81	56	30	12
G3IDG	94	64	53	27	17	11
GW3PSM	69	19	47	38	24	1
G3PMR	48	21	37	20	5	10

(Failure to report for three months entails removal from this Table. New claims can be made at any time.

TOP BAND LADDER

(G3P-- and G3R-- stations only)

(Starting Date, July 1st, 1962

Station	*Counties*	*Countries*
G3REA	80	15
G3PLQ	80	14
G3RRU	79	15
G3RBP	77	20
G3PVK	68	14
GW3PPF	61	12
GI3RCB	61	9
G3PRT	53	10
GM3PPJ	52	5
G3RHM	50	9
G3PPE	49	10
G3PWY	48	12
G3RFT	47	7
G3PMR	46	10
G3RQT	46	9
G3RJM	45	10
G3RJI	45	5
G3RDQ	42	8
G3RJH	39	9

(NOTE: *New entries for this ladder will be accepted only up to July 1st. The ladder will continue until the end of 1963.*)

SWL • • • • • •

READERS' NEWS AND VIEWS — DX, AND PET HATES — THE VHF INTEREST — THE FRIENDLY AMATEUR

AS the Editor is still receiving letters from short wave listeners who plead that this feature might be made monthly instead of bi-monthly, a word of explanation is called for. In the March, 1963, instalment of "SWL" (p.33) appeared a statement that we should in future be doing more to help the keen novice along the road, with the implication that some of the "SWL" space would in future be devoted to transmitting problems which we know to be of equal interest (to many short wave listeners) as purely receiving matters.

Instead of waiting until the May instalment for the first of these articles, the Editor decided to print it in the April SHORT WAVE MAGAZINE, and in that issue there duly appeared the first of a new series entitled "For The Beginner." This first article covered the subject of crystal oscillators; the second and third, in the May and June issues, dealt with VFO's; and the fourth, next month, will discuss mixer circuits. All these articles cover the reception *and* transmission aspects, since much of the circuitry discussed is used in both.

This is just to explain, therefore, that these "For The Beginner" articles are intended for *you*, the readers of "SWL"; and you are therefore being presented with a regular ration of suitable material *as well as* this bi-monthly feature—a better deal even than you asked for. The discourse on letters received, and the news and views arising from them, will continue to appear under the "SWL" heading in alternate issues, together with the HPX Ladder—but rest assured that the Beginner (or Novice, or SWL—whatever name he goes by) will not be neglected. In fact he will be regarded, as always, as being of great importance for the general well-being of Amateur Radio.

Points from the Post

Readers' letters cover an immense variety of subjects, the common thread running through them all being "DX." Once again we must explain that we cannot print lists of callsigns heard, but of course will always be pleased to refer to any outstanding or unusual happenings on the bands. So we will start with just this subject.

Stewart Foster (Lincoln) says "During April the 14 mc conditions were really excellent in the evenings, but now, by the end of May, it's mostly Europeans until 2030 GMT." Too true—and the normal seasonal happening on that band. SWL Foster will be away for two months before starting work at Nottingham University, and doesn't know how he will exist without a receiver at hand!

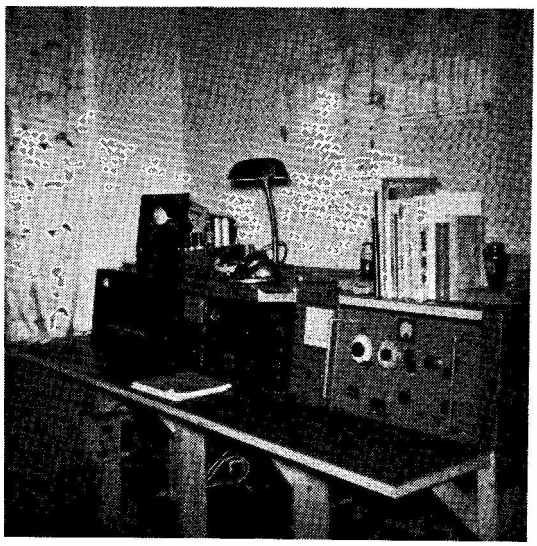
David Douglas (Edinburgh) informs Top Band enthusiasts that GM3LIB is very active on 160m. with a half-wave aerial 110 feet high, which should put out quite a signal. SWL Douglas, by the way, wants to buy or borrow a manual for the AR77-E—*(QTH:* 92 Temple Park Crescent, Edinburgh, 11.)

A. W. Nielson (Glasgow) was amazed to log a new country on 28 mc—FG7XT (May 23 at 2345). Both 21 and 14 mc also gave him lots of nice DX, including an all-time first, TI9RC (Cocos), on SSB.

David Warburton (Dollar) says he heard the Galapagos Expedition (HC8CA) forced to go QRT by "locals" calling him when he was trying to work Europe. He also reports PX10AC on 14 mc AM, and VR5ZZ, who was heard on a band full of Europeans at 1610 GMT. (Reluctantly, we suggest that he was one of them! There's no such call and the time is quite wrong for the Pacific.)

R. R. Loe (Colchester) found 14 mc tailing off in the early morning sessions, though afternoons and late evenings have continued good; he also comments on the tremendous short-skip on 28 mc at various times.

H. G. Shaw (Heswall), still at the top of the HPX ladder, has only been able to listen in the early mornings and for an hour or two around midnight—but even this brought him in 21 new prefixes, which can't be too easy when your score is already 650 or thereabouts! He makes a very cheering comment to the effect that it seems that Clottery is a little less



This neat SWL layout is operated by D. J. Bean, 51 Heathfield Square, London, S.W.18, who started three years ago by building simple receivers and now runs an HRO-MX (centre). The power pack is on the left, with switch and meter panel, and on the right is an R.1392 used for 2m. reception. (This space is where the Tx will go if the May R.A.E. results come out as they should.) An inter-com. unit, with speaker and c/o switching, allows for two-way speech between shack and living-rooms — (we would guess that the usual sort of conversation is: "Come along, now, lunch is ready" — "All right, just coming"!). The console assembly is home-built, and incorporates a mains isolating switch, with compartments beneath for storage of what SWL Bean calls "the usual bits and pieces."

prevalent than it was—and how we hope he's right...

Roger Western (Torquay) has found 28 mc very interesting (5N2, 9G1, VQ2 and CR6 have been heard); 21 mc has sometimes been open to USA until after midnight; and 14 mc SSB has been the main hunting-ground. On his recent visit to Paris he was royally entertained by F8QT and met several others. He is sure that any SWL's (or amateurs) visiting Paris need only contact one of the Parisian amateurs beforehand to be assured of a good welcome.

SWL Western and *Barry Curnow (Plymouth)* got together at Easter, spending 50 hours in the latter's shack and logging over 80 countries during the session! SWL Curnow himself remarks on VP8GQ's "fantastic" signal on 7 mc, on which band he has also heard rarities like 5R8CE/FH8, VP2APA, VP7AT and VS9AJA.

Queries

R. M. Bloomfield (Crowthorne) wants identification of WL2LCE and H1ACS and asks "do such calls exist?" We should say not . . . *S. Howell (Hove)* queries 6YABL—but that one *is* genuine. "6YA" is the new prefix for Jamaica, and 6YABL is the former VP5BL—and so on . . . Several correspondents in the last batch of letters queried "UB5ARTEK"—an improbable call if ever there was one—but it turns out to be quite in order. Thanks to those who have written on the subject—Artek is a holiday camp in the Crimea for Young Pioneers and the special call has been assigned to their club station.

John R. Dawes (Worksop) asks whether there is such a thing as a UO3—we have never met one and it doesn't seem likely . . . This suffix business still causes confusion. FR7ZC/G and FR7ZC/E, for instance, do count, because the suffixes mean that he was in two different "countries" at the time—Glorieuses Is. and Europa Is. But LU2DAW/P is merely a portable, and W3RNC/1 is just a W3 operating from W1, so *they* don't count.

HPX LADDER

(Starting January 1, 1960)

Qualifying Score—150

SWL	PREFIXES	SWL	PREFIXES
PHONE ONLY		*PHONE ONLY*	
H. G. Shaw (Heswall)	672	P. A. Whitchurch (Bristol)	251
A. W. Nielson (Glasgow)	593	D. Barker (Brownhills)	245
R. J. C. Coats (Cowie)	582	D. Cree (Newark)	237
R. Hunter (Kenton)	508	R. Harsant (Ware)	231
D. S. Smith (Stanmore)	461	J. D. Williams (Winchester)	230
R. R. Loe (Colchester)	451	S. Howell (Hove)	229
C. N. Rafarel (Poole)	448	A. Stone (Kidderminster)	228
D. Douglas (Edinburgh)	432	D. Hayes (London, W.3)	227
B. Curnow (Plymouth)	432	M. D. Ottley (Crowthorne)	216
R. K. Western (Torquay)	400	A. J. Birch (Lichfield)	208
D. A. Whittaker (Waddington)	395	B. J. Tarry (Warrington)	206
F. Bourne (Plymouth)	381	M. V. Collins (Crayford)	200
P. Whipps (Enfield)	380	J. R. Daws (Leeds)	200
D. Gray (Easington)	379	A. F. Roberts (Kidderminster)	196
K. Whitley (Castleford)	369	D. J. Dixon (Widnes)	187
S. Foster (Lincoln)	369	B. B. Charge (Cheshunt)	183
K. C. Staddon (Stroud)	369	M. A. French (Highbridge)	180
P. J. Lennard (Wartling)	360	R. M. Bloomfield (Crowthorne)	172
J. E. Pither (London, E.5)	355	K. M. Duggan (York)	166
A. L. Davidge (London, E.12)	341	M. Maxfield (Solihull)	164
D. J. Aldridge (Southend)	337	D. Welby (Eastleigh)	163
M. Warrington (Burnley)	335	D. Beaumont (Manchester)	161
M. Healey (Horsham)	334	P. R. Doughty (Loughborough)	157
M. D. Stapleton (London, W.13)	327	P. H. Moncaster (Goole)	156
C. M. Palmer (Birmingham)	323	C. G. Ivermee (Reading)	151
C. H. Miller (Tayport)	308		
M. J. Summers (Market Harborough)	305	*CW ONLY*	
R. G. Evans (Swansea)	302	R. K. Western (Torquay)	492
R. J. Howgego (London, E.11)	293	P. J. Lennard (Wartling)	412
A. Huggett (Lamberhurst)	288	R. Hunter (Kenton)	378
D. J. Warburton (Dollar)	275	G. Thomas (Salford)	348
W. J. Atherfold (Southwick)	272	B. Curnow (Plymouth)	333
G. C. Steedman (Huddersfield)	269	P. L. Stevens (Donnington)	318
M. Vincent (Cheltenham)	268	P. Whipps (Enfield)	302
J. T. Eden (Solihull)	254	K. M. Duggan (York)	264
R. V. Coupe (London, W.3)	251	M. Vincent (Cheltenham)	200
		D. Beaumont (Manchester)	158
		M. Healey (Horsham)	150

(NOTE: *Listings include only recent claims. Failure to report for two consecutive issues of "SWL" entails removal from the Table. Next list, September 1963 issue, deadline July 26.*)

SWL • • • • • • • *continued*

Pet Hates

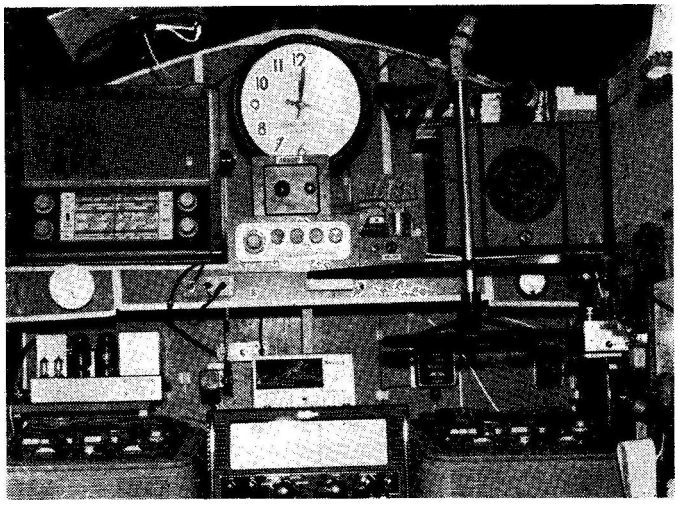
We make no apology for quoting readers' grumbles, because in most cases they do underline something that is wrong, and could be improved. For instance: *Roger Western* "listened to a QSO between two W's for half an hour without hearing a callsign, and then they signed off by gabbling so incoherently that although they had good signals I couldn't get the calls." That one is very prevalent, and quite deplorable.

From *P. R. Doughty (Loughborough)*: "My two pet hates are people who *always* give '5 and 9,' and others who call CQ blind on top of some nice DX."

And from *Philip Whitchurch (Bristol)*: "I find that reasonably rare DX stations do not respond to QSL's even when they are sent direct and return postage enclosed. And this is not limited to DX—there is a G in the North of England . . ." Well, some do and some don't. But rare DX stations receive QSL's by the thousand, and an SWL report has got to be of really outstanding interest to mean anything to them. The fact is that routine SWL reports (Your sigs 5 and 7, FB) mean *nothing* to the average transmitting amateur, even from DX. Successful SWL's extract a card in return by sending "period reports" (for instance, by listening to a DX pile-up and, perhaps, reporting some interesting stations who called but were missed in the QRM); or comparative reports with other signals from the same part of the world; or by forwarding some DX news that might be of interest to the man concerned. You've got to be pretty crafty these days . . .

DX-TV

Once again *Charles Rafarel (Poole)* followed TV rather than amateur-band signals, and he wishes he could get more people interested in what is, after all, another branch of the SWL art. The main difficulty here is not the extraction of QSL's but the actual identification of the station tuned in. Test-card identi-



The station owned by SWL L. H. Adams of 7 Chestnut Avenue, Grays, Essex is insured for £600. Among much other equipment, his main Rx is an Eddystone 680X, with which he runs two Telefunken tape recorders and a variety of hi-fi gear. The handwheel on the right controls a Mosley 7R33 3-ele beam for the HF bands, with a slot-fed 4/4 array for two metres carried on the same mast. One of the chief activities of the station is tape-recording reports for DX phone operators. Now 59 years of age, SWL Adams (left) has been actively interested in amateur reception since 1920. He started at the age of 16, as many another of our readers has done.

fication is pretty easy—if you strike them at the right time.

On May 22 he had confirmation that a "mystery" test card emanated from Helsinki, Finland (Channel E2), and a terrific Sporadic-E opening at the end of May brought in all the old European favourites at great strength, as well as a few new ones.

Quotes from Letters

"I do about 90 per cent CW listening, 5 per cent SSB and 5 per cent AM" *(Phil Stevens, Wellington)* . . . "Have passed R.A.E. and hope to take the Morse in June or July" *(David Woodhouse, Newark)* . . . "My age is 13 and I belong to the local club, which has taught me a lot" *(M. A. French, Highbridge)* . . . "If this is a sunspot-minimum period, I would very much like to know what a sunspot-maximum is like!" *(Roger Evans, Swansea).*

"Plans for the future include building a reasonable receiver, and taking the R.A.E. in November" *(Peter Whipps, Enfield)* . . . "Don't be disappointed by seemingly poor returns from QSL bureaux—cards sent out two years ago are producing responses *via* the bureaux now" *(Dave Gray, Easington).*

"I hardly ever listen to 14 mc, because of the QRM, but when 21 mc is in a good mood, every signal on the band is DX" *(D. Beaumont, Manchester)* . . . "One thing that gets my personal, private goat is a local who consistently says 'Hi' after a joke—usually very weak anyway—when in QSO with a chap only a few miles away" *(R. Harsant, Ware)* . . . "I am sixteen years old and passed the R.A.E. last year, but O-Levels are halting Morse practice at present" *(David Cree, Newark).*

"SSB seems to be spreading over the whole 14 mc band instead of staying at the high end, as it used to" *(R. J. Howgego, London, E.11)* . . . "I find the low end of 14 mc best—there is no QRM from W's, though many 11's put in thoroughly bad signals at times, causing tremendous 'splatter' QRM *(D. H. Doff, Wallington)* . . . "When I was ordered to bed for a few days, I dismantled my equipment and rebuilt it alongside the bed, so I was listening from early morning and collected quite a list of new ones" *(K. C. Staddon, Stroud).*

"Fifteen metres is nowhere near last year's standard" *(Ronald Coats, Cowie)* . . . "About 90 yards from my house there was a very large tin building; recently this has been taken down, and signal strengths in that direction have gone up by about *six* S-points" *(Melvyn Collins, Crayford)* . . . "Recently I was pleased to gain the Ex-G Club SWL Certificate (No. 2) after spending a little under a year working for it. The requirements are QSL's from eight USA members (not more than two from one call area), four VE members and two overseas members. Interested SWL's can obtain full details of the Club and the Certificate by sending an s.a.e. to G4MJ *(QTHR)*." *(Dave Gray, Easington).*

VHF Interest

Martyn Vincent (Cheltenham) has got a two-metre converter going and has already logged twelve countries; he finds it fascinating to be able to experiment with VHF aerials so much more effectively.

Bob Towers (Cambridge) missed the VHF opening of May 25-27 but now has until early October at home to look out for the next one! He is building yet another two-metre converter and thinks he may drop the HF bands altogether.

[over

D. S. Smith (Stanmore), having just acquired a taste for two metres, found that the Radio Society of Harrow were running a portable station in a contest, went along and lent a hand (he was used as a "mast" for a 23-cm. dish aerial at one point!) VHF enthusiasm was suitably stimulated.

Stephen Foote (Reading) is fourteen years old and has been listening "seriously" for about nine months. Already he is on two metres, using a converter and a "dipole in the roof space."

Overseas SWL

E. A. Lomax is a 5N2 listener at Kaduna, Northern Nigeria, which, he says, is quite a good part of the world to be in. They are near the Equator, and on most North-South QSO's they manage to hear both ends. But ZL and VK are very rare—on any band. The 14 and 21 mc bands carry the DX, and 7 mc is occupied by a local phone net on Sunday mornings with stations from 5N2, 9G1 and TT8 taking part. The main trouble in Kaduna is the "wildly fluctuating mains voltage"—particularly when lightning strikes—which makes SSB reception tricky, despite the BRT-400 receiver available.

The Friendly Types

Recent evidence to the effect that most transmitting amateurs were more friendly towards SWL's than the SWL's themselves supposed has produced some very nice tributes to individual amateurs. *Colin Palmer (Birmingham)* has changed his opinion recently. It was not a good one, after hearing a certain G's remarks on Eighty about the SWL fraternity; but he heard (or thought he heard) a G on Top Band and sent him a report. Despite the fact that he had either misread the callsign or logged a pirate, a nice letter came back, apologising for the lack of a QSL because the report didn't check.

Those local rag-chewing types who (even now) make sarcastic remarks about short wave listeners are merely discrediting themselves. It is significant that they are usually the people whose operating standard is far from high—and the SWL's who hear their opinions being aired should remind themselves that they are not typical amateurs in the best sense of the word. Of course, for SWL's as for anyone else, there is a right or a wrong kind of approach, whether through the mail or in person. But we are quite sure that 90 per cent of licensed amateurs realise that the keen SWL is the right type of transmitting amateur in the making—and they will do all they can to lend a helping hand.

Many are the cases we know of, in which active amateurs have dipped into their junk boxes or sold off some obsolete equipment at absurdly low prices to some young and impecunious SWL, even though he represents a serious threat of future local QRM to them!

Please note the deadline for the next instalment (in the September issue)—*Friday, July 26.* Good Listening until then, and we look forward to another interesting post-bag to usher in the new DX season.

—•—• *ABOUT LEARNING MORSE* —•—•

WHETHER we like it or not, a pre-requisite for obtaining a U.K. amateur transmitting licence is the ability to "send and receive plain-language text at a speed of not less than 12 words per minute." Thus, one of the first problems facing most beginners is "How can I learn Morse, quickly and easily?"

First of all, there are the excellent courses designed for learning at home and enabling a high standard of proficiency to be reached. There is also the possibility of local tuition, either at a radio club or by some kind friend who is already a competent operator. If no club exists locally and no personal contact can be made with a qualified operator, a box number advertisement in the local paper will almost certainly bring a reply from somebody who knows the Code well enough to get a beginner started. There can in these days be few districts where there are no ex-Servicemen who have had to learn Morse at some time or other.

Self Tuition

If our beginner is still without his helping hand, he can—strange as it may seem—learn Morse perfectly well all by himself! The first thing to do is to memorise the Code, in terms of dots and dashes buzzed vocally, simply remembering that the length of a dash, *dah,* is equal in time value to three dots, *dit-dit-dit.*

This should be practised until any letter of the alphabet can be buzzed instantly, on sight, without having to sort it out in terms of *dits* and *dahs.* For example, the letter "Q" should sound like *dah-dah-dit-dah,* in the same way as it looks like "Q" as printed here, without having consciously to analyse its shape.

Having got thus far, and the alphabet memorised with confidence, tune round on the short wave bands —in the BC and amateur frequency areas—till you hear some powerful station sending repetition signals in Morse—there are many of them, fast and slow, and between the sending of actual traffic, they hold the channel open by idling on the call-signs. These are the repetition signals, and what is being sent may be something like "VVV de WSC," or "ABC de OHX." For some little time, you may not be able to make much of this, especially if the repetition suddenly breaks into high-speed sending; then, you leave him, and tune on to some other station transmitting repetition signals. At first, when listening to these signals, all you will grasp is that it *is* repetition, because your ear will pick up the *rhythm.* After carefully listening, you will start getting a letter here and there, till finally you have the whole sequence complete—VVV de WSC.

This will be your first big thrill—you have picked up something in Morse, entirely by your own efforts.

Now the factor of rhythm will assume its true importance, for if you have been lucky enough to pick out a steady, well-keyed repetition signal you will automatically begin to get your time values right. Your "VVV de WSC" begins to sort itself out neatly, because there is a definite timing between

SWL • • • • • •

continued

the letters of each group and between the groups themselves.

Practice

Having learnt the Code by its sound values, and appreciated the importance of rhythm—which really means spacing, exactly as print is spaced in this sentence you are reading—the next thing is *practice,* and yet more practice.

Apart from the help your receiver will afford you in finding stations to which to listen, you can also practice continuously, almost anywhere and any time, without even a receiver! How is this possible? It is by buzzing over to yourself in Morse such phrases as newspaper headings, advertisement posters, car numbers—in fact, any piece of print that happens to catch your eye. By this process you get the *sound* value of each letter and figure impressed on your brain. Remember, it is by *sound* that you read Morse, not by analysing each group of dots and dashes into their letter-meanings. The importance of this cannot be over-stressed, for if you can acquire it, you cut out the one mental process which is every beginner's difficulty in acquiring speed and accurate reading, or "copying" as it is called by CW operators. "Q" must mean (buzz it) *dah-dah-dit-dah* to you, and nothing else. The aim must be to get the sound of each character impressed on your brain, so that you read by ear in the same way as your eye reads print, without having to analyse the shape of each letter, or even the letters of a word.

General Guidance

There are no snags whatever in this process—except perhaps that your family and friends may begin to look at you a bit oddly when they hear the buzzing noises!

Do not be discouraged by what may seem slow progress—in the preliminary stage, some people can learn the Code, letter by letter, very quickly. Others take much longer, especially if, as they should, the Code is learnt not in alphabetical order (which involves another mental process) but by putting letters and numbers down at random. Avoid anything in the nature of "memory aids"—that "A" is opposite to "N," or that "U" is "D" the other way round, or that "6" has one more dot than "B." These are not aids at all; they slow you up by giving your brain something else to remember and work out!

The time factor in learning is only important insofar as you should not overdo it and tire your brain; one hour's practice a day is usually quite enough, unless you feel you really want to give more. A good check on your own progress by this standard is that you may find yourself able to read callsigns and previously-unheard repetition signals in about three weeks. The rest comes with continued practice, and you will probably be reading pretty confidently on the amateur bands in about two months. If you can do better than this, you are doing well. Remember, you are learning for the fun of it, so don't wear yourself out, or allow yourself to be influenced or discouraged by those who tell you either that it took *them* three weeks, or three years, or that they never could get on with it at all.

All sorts of nonsense is talked about learning Morse, and the fact is that each case is individual.

No Key or Buzzer!

Having decided to learn on your own by the method described here—which is, of course, only recommended where there is no expert tuition available—the one thing to avoid is practice with a friend who is at the same stage as you are! The worst and most difficult way in which to learn Morse is to sit down, with buzzer and key, with somebody who also has no idea, and then proceed to make unintelligible noises at one another. Unless one partner is an operator with a good knowledge of how properly-sent Morse should sound, the whole business will take very much longer and will almost certainly mean that much will have to be *un*learnt.

In the early stages, the CW station that you find on your receiver, sending repetition signals, is your partner, sending to you all the time perfect Morse over which you can spend as long as you like.

BARONETCY FOR G5OG

We were very glad to see, in the Birthday Honours List, that as an ex-member of the Government now in the electronics industry, Charles Ian Orr-Ewing, O.B.E., M.P. for Hendon North, had been made a baronet. He was Civil Lord of the Admiralty until early this year, when he resigned to take up an appointment outside the Government. Licensed for many years as G5OG, he was very active on the air in pre-war days. After a distinguished period of war-time service in the R.A.F. Signals Branch, for which he was made O.B.E., he entered Parliament, and was soon in the promotion list for junior ministerial appointments. He is a member of a well-known West Country family with a long record of public service.

REPRESENTATION AT THE R.E.C.M.F. EXHIBITION

A tour round the recent Radio & Electronic Components Show (Olympia, London, May 21-24) was not only extremely interesting and rewarding for what was to be seen and discussed at the stands, but also because so many holders of AT station callsigns could be found doing stand duty. If, as our own researches suggest, 50% of U.K. licences are held by "professional amateurs," then most of them must have been in or around Olympia during the four days of the Show. Speaking for himself, your correspondent seemed to meet one at every turn —and very nice that was, too.

NEW RADIO TOWER IN THE COTSWOLD COUNTRY

It has been decided to build a new Government radio station at Goose Green, Wotton-under-Edge, Glos., involving a 230 ft. mast; with the station buildings, this tower is to be designed to harmonise with the surroundings, in an attractive and unspoiled stretch of country on the Cotswold escarpment. This new installation is in furtherance of the official policy to expand the network of radio communications for defence purposes and to meet the growing demand for public telephone circuits and TV relay facilities. In other words, it is a UHF linking station requiring dish antennæ working over line-of-sight paths.

PHOTOGRAPHS AND ARTICLES

We are always glad to see, for possible publication in SHORT WAVE MAGAZINE as paid contributions, articles on subjects of Amateur Radio interest—whether constructional or theoretical. Sound and well illustrated practical articles of a mainly constructional nature make the highest rates. Photographs of general amateur interest are always wanted, and may be of equipment or personalities, stations or pieces of gear. Prints should be clear and sharp, with descriptive notes on a separate sheet. A general note on the preparation of articles appears at the foot of the Contents page in every issue of SHORT WAVE MAGAZINE.

DL4/DL5 CONVENTION AND HAMFEST

We are asked to announce that over the weekend of August 3-4 the DL4's are staging a radio amateur party and get-together in Heidelberg, West Germany. An interesting programme has been arranged, and all American, British and Canadian amateurs who can get there are invited. The gathering will be at the Community Centre, Patrick Henry Village, Heidelberg, Baden. The ancient city stands on the River Neckar, and is well worth a visit for its own sake. The organiser for the Hamfest is Russ Lawson, DL4BS, who will be glad to give further information on request to him at: Postfach 3049, Darmstadt 6100. He can also be reached by land-line phone on *Darmstadt Civilian 76931*.

SUMMER PRICE-REDUCTION OFFER

Daystrom, Ltd., Gloucester, are giving a price reduction of 5% on all orders received by them before August 17. The offer applies to the mail-order price, exclusive of purchase tax, on British Heathkit equipment in their current lists. Write Daystrom, Ltd., Dept. SW7, Gloucester.

Having kept off the hook for so many years, Eric Martin, G6MN, of Worksop, Notts., was recently married. One of the best known of the old timers — his experience goes back to the 1920's and he has been regularly on the air in the latest modes ever since — he is the principal of a very old-established firm of printers in Worksop, and was the first regular producer of QSL cards in the U.K. We wish Eric and Helen many years of happiness — and we are informed that he is assured of tolerance and leniency as regards Amateur Radio! Anyway, she let him out to go to the A.R.M.S. Rally at Barford.

VHF BANDS

A. J. DEVON

THE picture this time is a good deal brighter, with openings taking in all VHF bands, and in consequence a much higher level of apparent activity and quite a lot of EDX/GDX working—and, of course, resulting from it all a steep increase in claims for the tables.

Though the movement actually started about May 25-27 (cautiously forecast in this space last time) as the period of fine and more settled weather developed, it was not until about June 7 that things really began to open up, with the evening of the 10th giving one of the best sessions. Over that week-end, the GM3KXA/P expedition was being kept very busy, and on Monday 10th both EI2AG and EI2W were making QSO's in the south of England. In the other direction OZ and DL were being worked from the southern part of the country, and one interesting contact noticed (because of its distance across a mainly landward path) was G6ZP (Malvern) with PAØCML (Katwijk). The next evening, the 11th, G3FAN in the I.o.W. was working GM3KXA/P at 2230—their little expedition certainly had a lucky break with conditions. Another interesting result was the appearance, in the London and Home Counties area, of GI3GXP during the breakfast hour on the morning of Sunday 9th. He had several good GDX contacts, but unfortunately had to break off while he was still coming through well, with several stations waiting to try for him.

Weather conditions during this period of June 7-11 were classic for the development of a good VHF opening—a high glass, very warm days, little or no wind and a clearing night sky. The coverage did not take in quite all the U.K. and for Northern Europe extended easterly rather than to the south. In other words, it was by no means a grand opening, but nevertheless a good one. And, incidentally, it should be remembered that under the Wx conditions outlined, conditions are usually better in the early morning (for three or four hours from sun-up) than in the late evening. This is a well-known effect, which has been regularly noted over the years, and is, indeed, just what one would expect having regard to how the troposphere works to give DX communication on VHF. The reports this time show that quite a number of people know all about this, and several good contacts were made in the early hours of the day. Naturally enough, however, relatively few stations are found on at times like 0700—but if it's a Sunday morning, and you're making her a cup of tea (or the baby wakes you) it is always worth putting out a few calls on two metres if the Wx looks right and conditions have been good the evening before.

Four-Metre Story

The big news of the period seems to be of what until recently was our most-neglected though potentially very useful band—four metres. Anyway, the contest of June 15-16 brought on more activity than the 70·2-70·4 mc band has ever known before, conditions being fairly good but nothing special. A number of stations were out /P which, as always, produced an impression of high activity and exceptionally strong signals.

EI2W was on and worked no less than 14 new counties for his total of 27C on the 4-metre band. G3OJE/P, on the South Downs, had 58 QSO's, including EI2W. Louis of G3EHY (Banwell, Som.) estimates that about 100 stations must have been on, with all the U.K. prefixes represented; at one time, he noted no less than five GW's, on together, and he himself worked EI2W, many Lancs. stations, and G3DVO for Norfolk.

The A.E.R.E. lads took out G3PIA/P, operated by G2HIF, G3GKD, G3HS and G3NNG, and set up on a site near Wantage, Berks. Running 15w. to a QQ3-20, a 4m. converter with an 888A, a 4/4 at 12ft. spacing put up to 35ft., and power from 12v. accs. charged by a P.E. set, they worked 64 different stations in 30 counties and four countries—yes, it was 70 mc! Both CW and phone were used, best contacts on telephony being EI2W, GW3MDY (Flint) and stations in Yorks. and Lancs. On the key, they worked GM3EGW and GM6XW/P, two very nice ones indeed. It was actually the Harwell chaps' very

FOUR METRES

ALL-TIME COUNTIES WORKED LIST

Starting Figure, 8

From Home QTH Only

Worked	Station
34	G3EHY
27	EI2W
26	G3JHM/A, G3PJK
23	G3OHH
22	G5FK
20	G3NUE
19	G3BNL
18	G5JU
17	G3LZN
16	G3BJR, G3IUD
14	G3OKJ
12	G2OI, G3AYT, G3LQR, G5DS, GI3HXV
10	G3OWA
8	G3PMJ

This Table records Counties Worked on Four Metres, on an all-time basis. Claims can be made as for the other Tables, e.g. a list of counties with the stations worked for them, added to from time to time as more counties accrue. QSL cards or other confirmations are not required.

first experience of four metres, because the gear was not tested out until just before the contest (when there was nobody on the band to try with) and it was not until they were on site and heard G8PD/A that they knew the converter was capable of receiving!

TWO METRES

COUNTIES WORKED SINCE SEPTEMBER 1, 1962

Starting Figure, 14

From Home QTH Only

Worked	Station
77	G3BA
61	G3BOC
60	G3EDD
56	EI2W
54	G3BNL
53	EI2A
51	G3OXD/A
50	G2BJY, G3CO
48	G3JXN
47	G3HRH, G4LU
44	G3PLS
42	G3PTM
40	G3JYP, G3PBV, G3PSL
37	G2AXI
36	G3GWL, G3NUE
35	G2BHN, G3FIJ
34	G3OJY
33	G3JWQ
32	G3DVQ
29	G3CKQ, G5QA
27	G2DHV/P
26	G3BJR, G3CCA, G3NOH, G5UM
25	G3GSO
24	G3SAR, G8VN
22	G3LQR, G3PTO
21	G3GVV
20	G3JHM/A, G3NPF, G3PKT
18	GI3ONF
14	G2CDX, G3IOE, GW3ATM, GW3CBY

This annual Counties Worked Table will close on August 31, 1963. After June 30, only amended scores from those already standing in the Table at that date will be accepted.

According to G3PJK (Middleton Junc., M'cr.), the activity up and around there on 4m. during the contest made it sound like 80m. on a Sunday morning—it must have been frightful! Many southern stations, coming in strongly, were worked, also GI3HXV, GM3EGW and GM6XW/P — G3PJK gives G3PIA/P as the outstanding signal, which will be encouragement for the A.E.R.E. lot. The total of stations heard/worked by G3PJK was 33. Another northerner, G3AYT, went /P and accounted for about 50S.

Over Cambridge way, G3EDD reports that he was out with G3PYE/P; they worked 47 stations, and he mentions evidence of sporadic-E effects, with distant stations holding steady at good strength for some time and then disappearing suddenly. It is entirely likely that 70 mc would give very good DX under spor-E conditions, because 25 years and more ago, we relied on this peculiar and quite unpredictable propagation effect to give EDX on the old 56 mc band. (It is worth a note that stations in F, FA, I, HB and EA were being worked from the U.K. by sporadic-E on 5m. in the late '30's, and there are several of the old-timer operators still on the VHF bands who did it.) All one can say with certainty about the incidence of spor-E is that this is about the time of year for it, and around high noon the time of day. Signals from very distant stations will be extremely strong, apparently coming in like one-hop transmissions with little attenuation, and remaining workable for periods of anything from 15 mins. up to a couple of hours or so.

Getting back to G3PYE/P, at Linton, Cambs., G3EDD says that their 4-metre DX included EI2W, GM3EGW and GW3LJP—then the inlet manifold on the engine of the P.E. set cracked, and the last QSO was only possible by G3KRL " desperately holding the ends together while the volts went up and down."

GI3HXV (Finaghy, Belfast) is up to 12C on the 4m. ladder, his contacts being with GM2FNF and GM6XW, and he says he is still regularly active, looking for GDX. G3BJR (Harrow, Middx.) has got to 16C worked, one of his best QSO's being with G3EHY.

Altogether, quite an interesting, and most encouraging, tale of results on the 70 mc band. What about giving it a trial yourself ?

Forthcoming DX-Peditions

G2AVC and G3GOX of Hanworth, Middx., will be /A in Wiltshire over July 21-28, on 70·32 mc (four metres again) and will look for QSO's every evening—they will be glad to arrange skeds for any time of day. This is a husband-and-wife excursion, and they are *QTHR*.

For two metres, GM2ASF/P will be on the Isle of Arran, giving Bute, during July 14-27. This is a holiday trip for members of Coventry A.R.S., and the ops. on GM2ASF/P will be G3PQQ, G3RIR, G3RKA and G3ROD—they will also be filling in on Top Band. So they will have a pretty busy time.

The redoubtable Birmingham Univ. group propose to take GM3IUB/P into six of the Lowland Counties of Scotland for the week August 31 to September

70 CENTIMETRES

COUNTIES WORKED SINCE SEPTEMBER 1, 1962

Starting Figure 4

From Home QTH Only

Worked	Station
30	G2CIW
29	G3KPT
25	G3LQR
22	G3LHA
20	G3AYC, G3EDD
19	G3BNL
12	G3OXD/A, G5QA
9	G3NOH, G5UM
6	G3BIK
4	G3EKP

This Annual Counties Worked Table is reckoned from September 1st, 1962 and will close on August 31st, 1963. All operators who work four or more Counties on the 70-centimetre (430 mc) band are eligible for entry. Counties should be claimed as they accrue, and otherwise the rules are as for the Two-Metre Annual Table.

8, and it is hoped to operate on 2m. and 70 cm if gear for both bands can be got ready in time. The general plan will be much as last year, and skeds are offered through G3OAD (*QTHR*). Preferred times and bands should be stated, with the dates/times when operation will *not* be possible, so that adjustments can be made as between individual operators. G3OAD suggests that those who can take skeds in the 3.0-5.0 p.m. period should say so, in order to relieve congestion — and when writing him, enclose an s.a.e.

Looking at Seventycems

G3LHA (Coventry) is one of the keenest and most consistent of the 70-cm. group, and has recently accounted for five more counties, G3KEQ (Sanderstead, Sy.) at 97m. being a fairly regular contact. G3LHA says that the G.E.C.'s beacon sending GB3GEC on the 430 mc band is useful *because* it it so weak—he has to put in an A.2521 (G.E.C. valve !) RF stage to hear it at all. Hence, when GB3GEC is a strong signal in Coventry, conditions on 70 cm. must be very good in that direction.

The Albright & Wilson group in Birmingham run G3OXD/A on the VHF bands—they are now on 70 cm. with a DET24 in the PA taking 20w. Some 12C have been worked on 430 mc, with G3KEQ and G3LTF (nr. Chelmsford) as best DX. G3JMA (Harlow) is another strong 70-cm. man, with 36C worked, his latest being G3EGV/P in Wilts.; a good contact was with G3ILD (Co. Durham) on phone; on June 14 PAØCOB was heard on phone.

G3BNL (Keyworth, Notts.) is going well in both Seventycem tables, among his latest being EI2W, GW3MDY for Flints. and GW3RBM for Denbighs. (The new boys—and we don't mean EI2W or G3BNL—are certainly doing well on the 70-centimetre band.)

Two-Metre Clip

This is best covered in the Tables and by *verbatim* quotes just as they come from the pile at A.J.D.'s elbow. More than 40 movements have been taken in (correctly, it is hoped) and one of the first comments to record is from Harry, EI2W, who says: "I would like to pay tribute to the GM3KXA/P expedition; they kept a splendid time-table."

"I worked GM3HLH and G3IOE, both out of a relatively quiet band, and both on CW, a mode which I wish was more popular" (G3EDD) . . . "This is my first report to 'VHF Bands,' though I have been on two metres for several years; I run a QQV06-40A in the PA, with a slot-fed 6/6 and a transistor converter into a Mohican Rx tuning 24-26 mc" (GW3CBY) . . . "I think the GM3KXA/P expedition are to be congratulated on a jolly good show" (G3JMA) . . . "The GM3KXA/P expedition was heard here from each county they visited; EI4Q from Dublin is booming in again, and the nightly sked with EI2A has been nearly 100% on phone for the last three months" (G3EHY).

"Please add six new counties to my score in the Annual" (G2BJY) . . . "I have been active recently as G3OHC/M and have worked 17 stations, including EI2A and GM3KXA/P; I am off to EU on a holiday and hope to meet some of the chaps I worked when signing PA9OHC and ON5ZT" (G3OHC) . . . "I came straight up on two metres with 7w. to a 5-ele Yagi when I was licensed on May 7, and would like to claim 24C for the Annual; a contact of interest was with F3SZ in Boulogne; everything is home-built, and I think results are due to being 660ft. a.s.l." (G3SAR) . . . "As promised in May, I now have an outside 6/6 at 34ft.; results are very much improved but I still consider the indoor beam to be a very good start on the two-metre band, with 34 counties worked on it in six months" (G3PTM).

"I have worked another four counties on two metres" (G3PSL) . . . "The good spell produced a few stations to work; my best DX was a CW contact with G3EDD, and GM3KXA/P for East Lothian; I was hearing a few PA's on June 9, but they were very weak; I am still limping along with a skeleton-slot in the loft" (G3IOE) . . . "Since changing to a slot-fed 6/6, results have been very encouraging; lunch-time and early morning QSO's are increasing as the gospel spreads; I have worked GI3GXP at 8.30 a.m. and G3LHQ in Bradford at 1.00 p.m." (G3GWL) . . . "I would consider June 10 the best day since the December opening; EU's were coming through to the Midlands, and PAØCOB was audible on 70 cm. in the late evening" (G2CIW) . . . "A regular sked is being kept with G3RND in Pontefract, but the main activity at present is moving into a new shack, with new gear, a new Sideband Tx and a new receiver" (G3CCA).

"I understand that G3BJD, Seascale, Cumbs., is likely to be a regular on the band, which should put a rare county on the

TWO METRES
COUNTRIES WORKED
Starting Figure, 8

20	G3HBW, G3LTF (DL, EI, F, G, GC, GD, GI, GM, GW, HB, LA, LX, OE, OH, OK, ON, OZ, PA, SM, SP)
19	G5YV (DL, EI, F, G, GC, GD, GI, GM, GW, HB, LA, LX, OE, OK, ON, OZ, PA, SM, SP)
19	G3CCH (DL, EI, F, G, GC, GD, GI, GM, GW, HB, LA, OE, OH, OK, ON, OZ, PA, SM, SP)
18	G6NB (DL, EI, F, G, GC, GD, GI, GM, GW, HB, LA, LX, OK, ON, OZ, PA, SM, SP), ON4BZ
17	OK2WCG
16	G3GHO, G3KEQ, G5MA, G6RH, G6XM, PAØFB
15	G2XV, G3AYC, G3BLP, G3FZL, G4MW, GM3EGW
14	G2CIW, G2FJR, G2HDZ, G3CO, G3FAN, G3HAZ, G3IOO, G3JWQ, G3KPT, G3WS, *G5BD*, G6LI, G8OU
13	G2HIF, G2HOP, G3BA, G3DKF, G3DMU, G3DVK, G3EHY, *G3GPT*, G3NNG, G3PBV, G5DS, G6XX, G8VZ
12	EI2A, EI2W, F8MX, G3AOS, G3GFD, G3GHI, G3JAM, G3NUE, G3OBD, G3WW, G5CP, G5ML, G8DR, GW2HIY
11	G2AJ, G2BJY, G2CZS, G3ABA, G3BDQ, G3BOC, G3GSO, G3HRH, G3IUD, G3JYP, G3JXN, G3JZN, *G3KUH*, G3LHA, G3OHD, G4LU, G4RO, G4SA, G5UD, G6XA, OK1VR
10	G2AHP, G2AXI, G2FQP, G3BK, G3BNC, G3DLU, G3GSE, G3JHM/A, G3KQF, G3LAR, G3LTN, G3MED, G3OSA, G3OXD/A, G3RMB, G5MR, G5TN, G8IC, GC2FZC, GW3ATM, GW5MQ
9	G2BHN, G2DHV, G2DVD, G2FCL, G3BOC, G3BYY, G3FIJ, G3FUR, G3JLA, G4LX, G5UM, G8GP, GC3EBK, GI3ONF, GM3DIQ, GW3MFY
8	G2DDD, G2XC, G3AEP, G3AGS, G3CCA, G3EKX, *G3GBO*, G3HCU, G3HWJ, G3KHA, G3PKT, G3MPS, G3OJY, G3PSL, G3VM, G5BM, G5BY, G8SB

map ; the GM3KXA/P expedition was somewhat of a disappointment to me ; they were heard in all counties except Peebles, but naturally were concentrating on the stronger signals; however, they were worked when in Selkirk, and in Northumberland to complete my all English counties for the All-Time" (G4LU) . . . "Since March, the rig has graduated to a QQV06-40A running 100w.. modulated by a pair of TT21's in AB1 ; the 6/6 on the roof has so far escaped the landlord's notice ! The G3KXA expedition seemed highly successful, but I only managed to hear them in Selkirk ; how galling to find them calling me on sked at 549 and then getting *nil-nil-nil*" (G3JXN) . . . "The good conditions have brought a few stations on in the mornings; if only more were to make use of this period GDX and even EDX would be commonplace ; I used to sked GM2FHH in the early morning and we generally made it every one in two or thereabouts" (G3BA).

SEVENTY CENTIMETRES

ALL-TIME COUNTIES WORKED

Starting Figure, 4

Worked	Station
40	G2XV
36	G3JMA
35	G2CIW, G3KPT, G6NF
33	G3JHM/A
32	GW3ATM
31	G3JWQ, G5YV
30	G3KEQ, G3LHA
29	G3LQR
28	G3HAZ, G3HBW, G3NNG
26	GW2ADZ
24	G3LTF
23	G3BKQ, G6NB
21	G3AYC, G3IOO
18	G5UM
17	G3BA, G3BNL, G3MPS
16	G2DDD, G3MED
15	G2OI, G4RO
14	G2HDZ, G3FAN, G5QA
13	EI2W, G2BDX, G6XA
12	G3NJO/T, *G5BD*
11	G3BYY
10	G3HWR, G3IRW, G5DS
7	G2HDY, G3JHM, G3OBD/P
6	G3FIJ, G3KHA, G3WW
5	G3FUL, G3IRA, G3IUD, G3LTN, G5ML
4	G3EKP, G3JGY

On working four Counties or more on the 70-Centimetre band, a list showing stations and counties should be sent in for this Table, and thereafter new counties worked notified as they accrue

Convention Occasion

We are asked to put it around that the 1963 North-West VHF Convention and Dinner will be held at the Queens Hotel, Piccadilly, Manchester, on Saturday, October 5, opening at noon. Tickets are 25s., and a block of bedrooms at the Queens has been reserved for those requiring overnight accommodation, the bed-and-breakfast charge being 37s. 6d. There is a number-limit of 120 for the dinner, so early application is desirable. A 2m. talk-in station signing G3OHF/A will operate from the hotel, with a linking station on high ground outside Manchester. There is plenty of parking space adjacent, and the Queens Hotel itself is a good one. An interesting programme is being worked out and, as in previous years, this should be a very pleasant occasion ; the North-West VHF Group take a lot of trouble to lay on a good show. Postal application for tickets (convention and accommodation, if required) should be made to : T. Davison, G3AGS, 101 Grange Drive, Blackley, Manchester, 9. G3AOS and G3MAX will also be glad to deal with enquiries locally at 52 Great Ancoats Street, Manchester, 4 (Central 6276).

Quotes and Comments

G3LIT (Harlow) has been heard on MCW—and a very nice readable signal it was, too. At 2125 on June 9, ON5DA was CQ'ing on CW ; it would be interesting to know his U.K. callsign.

G3BA (Sutton Coldfield) reports a QSO with F1CW (Calais); it turns out that F1 is a new French licensing dispensation, applying to VHF phone-only stations—pity they have issued "CW" as call-letters in this case ! G3BA also mentions good Sideband QSO's with the following SSB stations : G2PL, G3EGK, G3ILD, G3MNQ, G6CW, G8SB and PA0FB (a particularly fine signal); heard on Sideband have been G3LKK and G3LLJ.

If you can locate as surplus the Pye PTC-112 equipment, this being their low-band model, snap it up—the PTC-112 was for commercial /M operation on the old 70 mc mobile-radio band, which means that it is almost a ready-made Tx/Rx rig for four metres.

Another thought involving the number "70," but cms. this time, for our 430 mc band, is to get hold of one of those manufacturer's surplus Band IV-V TV converters; working into a TV set tuned low on Ch.1, local 70 cm. amateur stations are found to come in quite well—hence amateur TV stations in the 430 mc band could give a picture. The idea (due to G3BA) is to use a TV receiving set-up in exactly the same way as we run VHF converters with a tunable main receiver, except that the frequency relationship is different and the object is to get a picture-output from ATV stations on 70 cm.

G3EHY recently sent a QSL to a certain station—in a few days it came back from the Post Office marked "Return to sender, house demolished"; wondering if he had blown himself up by pressing the wrong switch, G3EHY was relieved to hear said operator working /P during one of the contests.

G3SAR is 16, and still at school—he says it doesn't allow him as much time as he would like to get on the air. We should think not, too; work is much more important at this stage ! However, he is to be congratulated on making such an auspicious start on the two-metre band.

Deadline Date

For the next time, we need to have your mail by **Friday, July 19,** at the very latest. Send it all to: A. J. Devon, "VHF Bands," *Short Wave Magazine,* 55 Victoria Street, London, S.W.1. With you again on August 2, all being well. Till then, *73 de A.J.D.*

Miscellany

INCIDENTAL INFORMATION, AND ITEMS OF TOPICAL INTEREST

Welcome to the G3S - - "new boys." The trickle of these callsigns which has recently started will doubtless become a flood when the results of the May R.A.E. are out. This time last year the G3R's were making themselves known . . . how time flies!

— • • • —

Tom Appleby, W3AX, at present believed to be the first licensed amateur in the U.S.A., had a "transmitter" on the air in 1899! This distinguished gentleman is 77 years of age; a retired Commander, USNR; a practising Patent Attorney in Washington, DC; a church organist holding a musical degree; and a member of at least six nets and six radio clubs. His other activities (yes, other!) include work with the Armed Forces Communications and Electronics Association and with the Gravity Association for Universal Scientific Studies, of which he is a director.

— • • • —

"Far too many well-meaning CW men are butchering the international code, chiefly because they have not devoted enough time in learning how to control an electronic keyer . . . the operator who uses on-the-air operating sessions for practice purposes is, in most cases, delivering a black eye to the entire CW fraternity, since international Morse code, imperfectly formed and spaced, contributes absolutely nothing toward advancement of the art."

(*W6EAR, in "Electronics Journal"*)

— • • • —

A little while back we mentioned a phoney, signing CH3CL and giving his QTH as "Chloro." Our own little joke about chloroform misfired; several correspondents, to say nothing of a remote memory of our own fourth-form chemistry, remind us that chloroform is $CHCl_3$, *not* CH_3Cl. We still feel that a small quantity of the latter might be effective . . .

— • • • —

Many months ago a short paragraph described an elementary method of testing transistors, evolved by G8ON's son Peter. G8ON now tells us that the said Peter became licensed just before his sixteenth birthday, as G3RZP. A brief case history from the OM reads as follows: At the age of *two*, he mended a neighbour's fuse . . . at *four* he gave "lectures" to his young friends on radio . . . at *six* he could read simple circuit diagrams . . . and yet he had to wait until his fourteenth birthday to sit for R.A.E. (Morse was delayed for a further two years.) G8ON's problem now is how to phase out the young hopeful when he wants to use the rig himself!

— • • • —

"Home-brew *versus* Commercial" is a stock subject for argument, over the air and at club meetings. Those who build their own gear may do so because they prefer it that way, or because they wish to save money. But do they? G3ERB, in the Wirral *Newsletter*, suggests that this is often a fallacy, since the re-sale of home-built gear is difficult and its value out of all proportion to the time that has been spent on it, whereas reputable commercial transmitters and receivers have quite a high (and predictable) re-sale value. It can, in fact, be argued that the only valid reason for home-brewing is a technical, not an economic one. There is now such a variety of kits and ready-built apparatus available that not many are forced to build their own because they can find nothing suitable . . . in short, those who do, usually do it because they *like* it—and is there any better reason?

— • • • —

Now that the thundery season is on us again, owners of very long wires or very high beams tend to bite their fingernails while waiting for the weather report. And just why is it that *every* shower of rain, nowadays, seems to be highly charged? Surely it was not always like this? When those big drops start to fall, and your ears are assailed by frightful machine-gun noises, you can find out whether your aerial insulation is good . . . if it is, you should get some pretty lively sparks when you disconnect the lead-in and present it to an earth wire.

— • • • —

If your G.P.O. licence is not renewed (and failure to notify a change of address might be one reason),

". . . Well, I guess that will settle our TVI problems . . ."

you might conceivably have to take both the R.A.E. and the Morse Test—if you are a licensee who has never taken them. If they *have* previously been taken, then a new licence can be obtained within one year without further tests. If you go abroad, to a Commonwealth country, where you are able to take out an amateur licence, you may, on returning to the U.K., obtain a new "G" licence with your previous callsign by reason of an unbroken period of amateur activity, but the G.P.O. must be notified when you leave the country and you must re-apply immediately on return. This is an individual concession which may be granted or refused at the discretion of the Post Office. The G.P.O. departments dealing with amateur licences have abundantly proved their willingness to co-operate with the amateur fraternity, who should reciprocate with promptness and courtesy.

(Summarised from a paper by G8PF in "R.A.F.A.R.S. Newsletter," No. 8)

— • • • —

According to Einstein, as the result of 22 orbits round the earth at 17,550 m.p.h., the astronaut Gordon Cooper arrived back to find his friends one twenty-thousandth of a second older than they would have been if he hadn't gone.

(G3ROD, in "CQ Cars," Coventry)

— • • • —

In case the idea of learning Morse under hypnosis had passed through some minds, we might point out that this is not a two-way process. A correspondent who confesses to a very bad memory tells us that he "learnt the code" by this means, and still remembers it perfectly. He can send any words or sentences, but he just can't read a thing in the incoming direction! Maybe a hypnotist who could send *and receive* 20 w.p.m. could have evolved a better type of treatment?

— • • • —

Incidentally, it occurs to us that a spot of hypnosis might do a better job on certain *phone* operators, even if it only went as far as placing a taboo on expressions like "Aitch-Eye" or "Well, I'd better keep it short." To say nothing of "Pass along the handle, will ya" and "That's for sure."

— • • • —

What happens when our signals reach the Antipodes? Do they collect together again at one point, where we should be "just like a local," only to pass on and be lost in multiple reflections and echoes? G2TA quotes, from *Nature,* an account of an experiment from Texas; a pulsed transmitter operated in the range 8-64 mc, and with a receiving station at the antipode the signals were received after the trip half round the world and also at one-and-a-half times round. The highest frequency was 45 mc for the ½-round, and 22 mc for the 1½-round trip; but the average frequency for the ½-round was generally no higher than 26 mc. Reception was possible on 90 per cent of the occasions for *twelve hours a day,* but for the longer trip it was much less reliable. Moving the receiver 200 miles made no difference, so it seems that any focussing effect of the ionosphere is fairly broad. This probably means that, given the hypothetical clear channel, the British amateur should be able to work ZL for about 90 per cent of the time, daily, on 21 mc or 14 mc. Comments on this would be interesting.

— • • • —

That picture of the VLF receiver (p.184, June issue) brought in a letter from G3IZJ (Farnborough), who is in that line of business at the present time. Apart from being ex-VP8AZ, his work this year alone has taken him to 5A, VS9A, VS9M, VS1, VS6, CT2, VP9, VE3 and VE7—leaving, as he says, little time for DX'ing. By now he's off again—TF2, VO2 and VE3—all in the cause of VLF propagation research.

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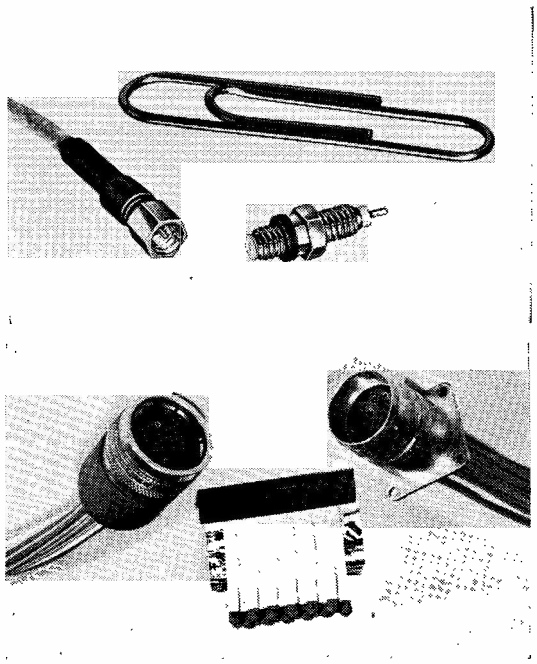
"I would dearly love to see a two-tone test with a true spectrum analyser on one of these pie-in-the-sky alleged linears!"

(W5EHC, in "Collector and Emitter")

"100-WATT RF AMPLIFIER"

The attention of those interested in this circuit, on p.177 of the June issue, is drawn to the note in the caption, to the effect that plate blocking condensers must be included in the PA tank circuit, L2. These were inadvertently omitted in the original diagram.



Some new miniature connectors introduced by Belling & Lee. The coax item is only 1/8th-in. in diameter. The miniature screened multi-pole plugs and sockets can be obtained with up to 61 power pins or 19 coaxial poles, within the casing size suggested by the picture.

NEW QTH's

This space is available for the publication of the addresses of all holders of new U.K. callsigns, as issued, or changes of address of transmitters already licensed. All addresses published here are reprinted in the U.K. section of the "RADIO AMATEUR CALL BOOK" in preparation. QTH's are inserted as they are received, up to the limit of the space allowance each month. Please write clearly and address on a separate slip to QTH Section.

DL2PB, D. J. Quigley *(G3PRI)*, 142 Belle Vue Road, Cowes, Isle of Wight.

G3NBM, M. L. Creighton *(9M2MC)*, 26 Regt. R.A., Horseshoe Barracks, Shoeburyness, Essex.

G3RLB, D. A. Powell, 6 Owen Avenue, Long Eaton, Notts.

GI3RNY, R. Williamson, Avonmore, Antrim Road, Ballymena, Co. Antrim.

G3RPF, D. R. Searle, 21 Chestnut Grove, Wilmington, Dartford, Kent.

GI3RPT, M. O'Boyle, 148 Creggan Heights, Londonderry.

G3RRZ, J. E. Kingston, Royal Horse Guards, R.A.C. Signal School, Bovington, Dorset.

G3RTC, Amateur Radio Club, Royal College of Advanced Technology, Salford 5, Lancs.

G3RYG, J. W. Davies, 34 Highfield Avenue, Romiley, Stockport, Cheshire,

GW3RYR, C. Morgan, 3 Nibloe Terrace, Penydarren, Merthyr Tydfil, Glam.

G3RYW, D. A. Wardlaw, 44 Arkwright Road, Sanderstead, Surrey.

G3RYX, D. McAndrew, 25 Kir Crescent, Lowfields, Acomb, York.

G3RZC, R. D. Pellett, 110 Ninfield Road, Bexhill-on-Sea, Sussex.

G3RZF, D. A. Horton, 14 Bernard Road, Wallington, Surrey. *(Tel.: FRAnklin 1622.)*

G3RZF/A, D. A. Horton, 350 (Carshalton and Wallington) Sqdn. A.T.C., Church Path, Beddington, Surrey.

G3RZS, N. W. Wooderson, 15 Cheney Street, Pinner, Middlesex. *(Tel.: Pinner 3308.)*

G3SAG, R. T. Matthews, 14 Vicarage View, Redditch, Worcs. *(Tel.: Redditch 2224.)*

G3SAH, R. J. Matthews, 14 Vicarage View, Redditch, Worcs. *(Tel.: Redditch 2224.)*

G3SAK, D. Fisher, 70 Flanshaw Road, Wakefield, Yorkshire.

GM3SAN, S. Weir, 19 Ellismuir Road, Baillieston, nr. Glasgow.

G3SAQ, A. Coles, 6 Fairholme Road, Burnley, Lancs. *(Tel.: Burnley 6985.)*

GM3SBB, C. Ridge, The Bungalow, Denhead of Gray, Invergowrie, by Dundee, Angus.

CHANGE OF ADDRESS

G2ACZ, G. Whitehead, 4 Chaucer Avenue, Mablethorpe, Lincs.

G2AMX, C. D. Bailey, 8 Rectory Close, Farnham Royal, Bucks.

G2FKS, G. D. N. Wilcock, 19 Cavendish Avenue, Cambridge.

G3BO, D. H. Jones, 2 Northview Hill, Bideford, Devon.

G3COL, H. Collins, 56 High Street, Runcorn, Cheshire. *(Tel.: Runcorn 2182.)*

GM3DIQ, W. C. Bradford, Ivy Cottage, 50 Main Street, Ratho, Midlothian.

GM3FAO, A. F. Davidson, Monymusk, Plot 2, Doonholm Road, Alloway, Ayr.

GD3FXN, A. D. Radcliffe, Goldenhill, Cronk Road, Union Mills.

G3GXQ, W. E. Roberts, 10 Main Street, Scholes, nr. Leeds, Yorkshire.

G3HFJ, R. G. Wyatt, 1 Coppice Green, Bracknell, Berks.

GM3HMW, W. J. A. Cain, 21 King Street, Stranraer, Wigtownshire.

G3IRR, H. P. Cooper, 48 Burses Way, Hutton, Shenfield, Essex.

GW3JGM, G. Millington *(ex-G3JGM)*, R.A.E.C., All Arms Junior Leaders' Regiment, Tonfanau, Towyn, Merioneth.

GW3JGM/A, G. Millington, 8 Alyn Road, Fairbourne, Merioneth.

G3JQJ, G. Moore, *(ex-DL2WM)*, 87 Haigh Road, Rothwell, nr. Leeds, Yorkshire.

G3KPT, G. V. Farrance, 106 Turnberry Road, Birmingham, 22A.

G3LAS, J. B. Butcher, 24 Upper Hall Park, Berkhamsted, Herts.

G3LHN, R. D. Muir, 1 Cedar Hill, Newport, Isle of Wight.

G3LKT, E. J. Chipperfield, 8 Douglas Haig Road, Salisbury, Wilts.

G3LZQ, J. Dunnington, 19 Harts Leap Close, Sandhurst, nr. Camberley, Surrey. *(Located in Berkshire.)*

G3NBX, A. W. Phillips, 73 North Road, Torpoint, Cornwall.

G3NJP, M. Phillips, 44 Blackacre Road, Theydon Bois, Essex.

G3OAA, P. Welch, 22 South Avenue, Stourbridge, Worcs.

G3OOB, C. L. Buckley, *(ex-DL2BO/VS1LB)*, 12 Newton Park Drive, Leeds 7, Yorkshire.

G3OUO/T, D. Mann, 67 West Hill, Wembley Park, Middlesex.

G3OVA, J. J. Lockyer, 23 Beechwood Road, Kings Heath, Birmingham, 14.

GM3OXX, G. Burt, 1/5 Essendean Terrace, Clemiston, Edinburgh, 4.

G3OZF, D. F. Beattie, No. 1 Flat, 7 Albemarle Road, Woodthorpe, Nottingham. *(Tel.: Nottingham 66860.)*

G3PXV, R. E. Wiseman, 4 Paragon Road, St. Ives, Hunts.

G3RDK, Dr. D. Doyle, 4 Wricklemarsh Road, Blackheath, London, S.E.3.

G3RDR, P. L. Rudwick, Top Flat, 74 Timpson Road, Fratton, Portsmouth, Hants.

G3RLG, A. Collorick, 8 Kendal Rise, Kingswinford, Brierley Hill, Staffs.

G3RMY, J. M. Andrews, 6 Rose Hill Terrace, Brighton, Sussex.

GW4OQ, G. C. Lidstone, 10 Clinton Road, Penarth, Glam. *(Tel.: Penarth 57395.)*

G5XD, B. C. Christian, Cregneish, Begwary Road, Colmworth, Bedford.

THE MONTH WITH THE CLUBS

By "*Club Secretary*"

(Deadline for August Issue: July 12)

(Address all reports for this feature to "Club Secretary")

CONTINUING on last month's theme of the clubs that fall by the wayside, it is obvious that the summer is the season of high mortality. There have been cases in the past of a club closing for the holiday season and never managing to re-open, and it seems that the same thing may well happpen in some quarters this year.

Some organisations are strong in mobile activity, and some go in for D/F events in a big way. They are fortunate, for the summer often sees the peak of their activity. But the small clubs who exist for the sake of routine meetings, not too tightly organised, always find a severe falling-off in attendance figures, and if they have to pay a fixed rent for their club-room they may well end up in the red.

The moral of all this (if there is one) is surely that it pays to stir up interest in outdoor activities. There is no need to wait for a Field Day that has been organised by someone else; if half a dozen members are sufficiently interested to erect a temporary station on some local high spot, that should provide jobs for a good proportion of the active members. The blockage comes in the earlier stages—the trouble is often to stir enough people into taking an interest in this sort of thing, although they would obviously be keen and willing helpers once the organisation was settled and the station waiting to be installed.

Think it over, secretaries—do you really want to keep your members together through the summer, or are you content for them to drift away from meetings, and possibly to lose interest to such an extent that they never come back?

Activity Reports

The "Questions and Answers" type of meeting seems to be popular at **Acton, Brentford and Chiswick,** who are holding one of these sessions on July 23 (AEU Club, 66 High Road, Chiswick, 7.30 p.m.).

Top Band mobile equipment will be the subject of G3PPI's talk at **Barnet** on July 30 (Red Lion Hotel, 8 p.m.). At **Bradford,** G3OGV will be talking about Tape Recorder Amplifiers on July 9; and on the 23rd there will be a visit to the works of Ferranti Ltd., Oldham.

The **Dorking** informal meetings for the month will be at The Wheatsheaf, Dorking, on July 9, and at the Black Horse, Gomshall, on the 23rd. Time, 8 p.m.—and visitors welcomed.

Liverpool are holding Open Meetings on the 23rd and 30th; on the 16th they are discussing the Liverpool Show plans; and on the 9th they have a debating session. **Midland** will meet on July 16 and August 20 at the Birmingham and Midlands Institute, 7.30 p.m.

Coventry have a Constructional Evening on July 8, after which there are no regular meetings, but a Mobile Night-on-the-Air will be held on the 29th. Some members are planning an expedition to the Isle of Bute during the latter half of the month (*see* "DX Commentary" for details).

The only meeting for **Crystal Palace** during the month will be an Informal Technical Discussion on the 20th. **Derby** will hold an Open Evening on July 17, a D/F Practice Run on the 24th, and meetings ("to be announced") on the 10th and 31st.

Mid-Warwickshire report that there are now 25 active members, and more would be welcomed. Anyone interested should contact the secretary (QTH in panel). Their R.A.E. Course (at the Mid-Warwickshire College of Further Education) is some fifteen strong and meets on Friday evenings. The regular meeting on July 15 will cover the subject of Equipment for Two Metres.

Mitcham will be getting together on July 19 and August 16—no arrangements notified as yet. **Northern Heights** were recently the guests of the Manchester club, where they spent an enjoyable evening; they also had a successful visit to the Emley Moor TV station, and are now getting ready to run demonstration stations on August 3, 10 and 17 at various local events. On July 17 there will be a

NOTICE TO ALL HONORARY SECRETARIES

Appearance in this space is free to those Clubs who care to make use of it for publicity and the reporting of their activities. Hon. secretaries are asked to ensure that their reports—addressed only "Club Secretary," Short Wave Magazine, 55 Victoria Street, London, S.W.1—reach us by the date given each month at the head of the feature. We can give no undertaking to write in late reports, received after the closing date. All reports must always include the name and address of the hon. secretary, for publication in the address panel.

Ragchew, and on the 31st a treasure hunt, organised by G8CB.

"Safety in the Shack" will be discussed at **Reading** on July 27, when G5TP will talk on the subject and members of the British Red Cross will be sending demonstrators. Reading Technical College will be running a series of lectures for R.A.E.—full particulars as soon as available.

WAMRAC report a successful "Activity Week-end" at the end of May, and by the time this appears their operation of GB3MYA (the Midlands Youth Assembly) will have taken place. Their monthly Circular Letter is strong in personal news of their members, now spread well over the world. ("WAMRAC," by the way, is the World Association of Methodist Radio Amateurs and Clubs, and the moving spirit is G3NGF.)

Wessex are holding a "Hare and Hounds D/F Contest and Mobile Rally" on July 28 (2 p.m. to 7 p.m.); and they keep up the summer spirit by meeting for a talk on Sailing, by G3RGY, at 8 p.m. on August 12 (Cricketers' Arms, Windham Road, Bournemouth).

"Gadgets Galore" is the intriguing title of the **West Kent** meeting on July 26. The idea is for members to bring along some of the odd devices that are of real value in their stations or workshops. (An idea that many other clubs might want to adopt—no copyright fees!) On July 12 they hold an "Exchange and Mart"—which sounds better than a Junk Sale.

Wirral report a very successful visit to the Mersey Docks and Harbour Board radar station. Their D/F Contest (May 26) was won by G3FOO and G3NTI. July 17 is booked for a general discussion on Aerials, and August 7 for an evening D/F Contest.

A "special activity" station with the call G3PKZ/A will be set up at Trent Park, Cockfosters, on July 14 by **Southgate.** They will be operating Top Band phone, and any mobile or other visitors are invited to call in and meet the members.

Cornish held their June meeting at Camborne, when their Radio Exhibition and Mobile Rally were the subjects for discussion. Meetings are held on the first Thursday of the month at the S.W.E.B. Recreation Hall, Camborne, and visitors to that area are cordially invited to drop in.

Crawley are settling down for a quiet period for the summer; at the July meeting, G3FRV will officiate at a Junk Sale. Among their ranks is one brand-new call (G3SBJ) and four or five more are expected by the end of the year. Monthly meetings have been averaging 30 to 35, and the committee are having to look round for bigger premises. Arrangements are in hand for a contest to encourage the up-and-coming CW operators.

The only club we can call to mind that publishes full reports of each meeting (right down to the calls of those attending) is **Hastings.** Unfortunately, despite a membership of around 80, the average turn-out of late has not been much better than 12. Steps are being taken to find out why. . . .

North Kent have had occasion to refer, in their Newsletter No. 68, to "discipline" at meetings, and occasional lack of courtesy to visiting speakers. It occurs to us that this must crop up from time to time in many clubs, and only a firm chairman can deal with it. Nothing is more annoying to a speaker than a background of quiet chatter, even if only two individuals are to blame (as they usually are).

In *GM,* the magazine of the **Radio Club of Scotland,** we find a plaintive enquiry about everyone's whereabouts on the air these days. "Has everybody gone QRT?" they ask. But the personal and social

Group photograph taken on May 12 at the Grimsby Hamfest and Mobile Rally. Unfortunately, the weather was cold, wet and windy, so that the expected attendance did not materialise. However, those who were there heard a very interesting lecture on Jodrell Bank, by a member of Sir Bernard Lovell's staff.

Who let the guy-wire go! Awkward moment for members of Derby & District Radio Society when the beam for G3ERD/P was being got up, at their site near Brassington for the recent VHF field day. Quick reaction on the part of the helpers saved the situation. (The photographer was paying attention, too — this is a fine action shot.)

side of *GM* is as lively as ever.

Reigate report membership stationary at about 35, all pretty active on contests, mobiles and general on-the-air work. G3REI/A will be in action at the Borough Carnival, and the next club night is July 20 at The Tower, Redhill.

Roding Boys' Radio Society report that they are thriving; they only accept new members after a trial period as visitors, and they are asked if they are willing to undertake a named project, at home, and to read a paper on it to the club. Projects on hand include a small radio telescope, a unit for studying wave motion, a multimeter and a demonstration board using plug-in components. A week's camp and a field day in August are also being organised.

At **Halifax,** they had a well-attended meeting to hear G3IGW about Top Band, and on July 2 the talk was to have been by G3RMQ on "My first 6 months on the air"—an idea that might interest other club-talks organisers. Meetings are at the local Beehive & Crosskeys, and there is always room for visitors.

On July 12, the **Sheffield** group will be hearing about Transistors, from G3LWB, with demonstrations; July 26 is the ordinary monthly meeting, at the Clubroom, 8 Sandbeck Place, Sheffield, 11.

The report from **Purley** speaks of expanding membership, more gear for the Club's own use, and —a very good idea this—they are producing an illustrated hand-out booklet to inform the general public on what Amateur Radio is about, with special reference to the activities of the Purley & District Radio Club; this will be available for fête occasions and such-like events at which the Club is represented. On July 8 Purley are having a day out under field-day conditions, on Kenley Common; and the meetings to follow are on July 19 and August 2, 8.0 p.m. at the Railwaymen's Hall (side door entrance), Whytecliffe Road, Purley.

A Mullard film show about transistors and a Junk Sale are the two items for the July meeting at **Sutton and Cheam.** This will be on the 16th at The Harrow, High Street, Cheam.

Wolverhampton will be holding a Treasure Hunt on July 15; nothing is yet announced for the meetings on the 22nd and 29th. On June 15 they held their first Mobile Rally, which went off

Names and Addresses of Club Secretaries reporting in this issue:

ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, W.3.
ARMS: N. A. S. Fitch, G3FPK, 79 Murchison Road, London, E.10.
BARNET: F. Green, G3GMY, 48 Borough Way, Potters Bar.
BRADFORD: E. G. Barker, G3OTO, 63 Woodcot Avenue, Baildon, Shipley.
CAMBRIDGE: H. Lowe, G3PEI, 47 Hurst Park Avenue, Cambridge.
CORNISH: W. J. Gilbert, 7 Poltair Road, Penryn.
COVENTRY: A. J. Wilkes, G3PQQ, 141 Overslade Crescent, Coundon, Coventry.
CRAWLEY: R. G. B. Vaughan, G3FRV, 9 Hawkins Road, Tilgate, Crawley.
CRYSTAL PALACE: G. M. C. Stone, G3FZL, 10 Liphook Crescent, London, S.E.23.
DERBY: F. C. Ward, G2CVV, 5 Uplands Avenue, Littleover, Derby.
DORKING: J. Greenwell, G3AEZ, Eastfield, Henfold Hill, Beare Green, Dorking.
HALIFAX: J. Ingham, G3RMQ, Lambert House, Greetland, Halifax.
HASTINGS: W. E. Thompson, G3MQT, 8 Coventry Road, St. Leonards-on-Sea.
LIVERPOOL: H. James, G3MCN, 448 East Prescot Road, Liverpool 14.
MIDLAND: C. J. Haycock, G3JDJ, 360 Portland Road, Birmingham 17.
MID-WARWICKSHIRE: T. Inkester, 13 Dormer Place, Leamington Spa.
MITCHAM: B. Blandford, 1 Biggin Avenue, Mitcham.
NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax.
NORTH KENT: B. J. Reynolds, G3ONR, 49 Station Road, Chingford.
PURLEY: E. R. Honeywood, G3GKF, 105 Whytecliffe Road, Purley, Surrey.
READING: R. G. Nash, G3EJA, 9 Holybrook Road, Reading.
REIGATE: F. D. Thom, G3NKT, 12 Willow Road, Redhill.
RODING BOYS': S. Wright, 10 Newton Road, London, E.15.
SCOTLAND: A. Barnes, GM3LTB, 7 South Park Terrace, Glasgow.
SHEFFIELD: D. A. Justice, G3PYL, 9 Leslie Road, Sheffield, 6.
SOUTHGATE: K. Spicer, G3RPB, 22 Clifton Road, London, N.3.
SUTTON & CHEAM: F. J. Harris, G2BOF, 143 Collingwood Road, Sutton.
WAMRAC: Rev. A. Shepherd, G3NGF, 121 Main Street, Asfordby, Melton Mowbray.
WESSEX: G. J. Fowle, 138 Surrey Road, Branksome, Poole.
WEST KENT: H. F. Richards, 17 Reynolds Lane, Tunbridge Wells.
WIRRAL: A. Seed, G3FOO, 31 Withert Avenue, Bebington, Wirral.
WOLVERHAMPTON: J. Rickwood, 738 Stafford Road, Fordhouses, Wolverhampton.

successfully. For their annual dinner, the attendance totalled 50 members and friends, and in addition to the speeches (by G2JZ, G3CLG, G6GR and Mrs. Crowe, wife of the club's newest callsign, G3RVA) trophies were presented to G2CVB (best lecture); to G3JJR (for service to the club); and to G3JRL (best piece of home-built gear).

CLUB PUBLICATIONS RECEIVED

Apart from those already mentioned in the text, we acknowledge with thanks the receipt of the following Club Publications:

A.R.M.S. (*Mobile News*, May); **Crystal Palace** (*Newsletter*, No. 91); **RAFARS** (*Newsletter*, No. 8); **Southgate** (*Newsletter*, June); **Hastings** (*Natter-Net Notes*, No. 39); **North Kent** (*Newsletter*, No. 68; **Reigate** (*Feedback*, May); **Wolverhampton** (*Newsletter*, June); **Coventry** (*CQ Cars*, June); **M.A.R.S.** (*Newsletter*, June); and **Purley** (*Splatter*, June).

SPECIAL-ACTIVITY STATIONS

The list following refers to amateur stations to be put on the air specially in connection with some public occasion or event locally.

GB3SSS, July 6-7: Operated by G3OFF for Surrey Senior Scouts Meet near Reigate, Sy., and to be visited by the Chief Scout. AM phone will be worked on the 10-80m. bands. QSL to: P. C. Hunter, G3OFF, 109A London Road, Morden, Surrey.

GB3BCW, July 6-13: Operating on the Saturdays of the Basingstoke Carnival Week, from the Memorial Park, running gear on the HF bands for DX working, and on Top Band and two metres for mobile talk-in. This is a carnival event, with fairground attractions. QSL's and information from: P. J. Sterry, G3CBU, Ashley, Orchard Road, Basingstoke, Hants.

GB3SS, July 12-13: In connection with the Great Southampton Show, running all bands 2-160m. and operated by members of the Southampton group. The Show itself covers a wide variety of interests and activities, including hobbies, horticulture, show jumping and arts and crafts. Mobiles are invited on the Saturday, July 13, when talk-in will be available on Top Band and two metres. QSL address and further details from: P. A. L. Shoosmith, G3MDH, 7 Fairfield Close, Hythe, Southampton.

G3OJE/A-G3PIZ/A, July 12-14: East Cheam Wireless Society at the Middlesex Senior Scout Camp, Chalfont Heights, Bucks. QTH for cards: D. C. Griffiths, G3RDQ, 7 Chatworth Road, East Cheam, Surrey.

G3ICY/A, July 13: Operated by Silverthorn Radio Club for Chingford Day, on 160m. only at Ridgeway Park, North Chingford, London, E.4. QSL address: E. Johnson, G2HR, 35A Woodland Road, Chingford, London, E.4.

G3PRT/A, July 17-19: At Cray Valley Technical School, Sidcup, Kent, in conjunction with their annual radio and electronics exhibition. The station will be on all bands 2-160m., with 80m. in use during day-time. Contacts with R.A.F. stations will be particularly appreciated. All QSO's will be QSL'd by special card. QTH: C. P. Cadle, G3PRT, 88 Lancing Road, Orpington, Kent, for information and schedules.

GB2LS, July 17-20: At the annual Liverpool Show, running all bands 10-160m., and looking for contacts with stations able to QSL before the end of the Show, so that their cards can be displayed on the stand. Address: H. James, G3MCN, hon. secretary, Liverpool & District A.R.S., 448 East Prescot Road, Liverpool, 14.

GB3KEC, July 25-August 9: For the Summer School of the Kent Education Committee, when the station will be running gear on all bands Top to two metres, CW and phone. QSL cards direct to Kent Summer School, Folkestone, Kent, to arrive during the activity period, will be much appreciated, otherwise *via* bureaux. All contacts and reports will be QSL'd. Schedules for teachers, students and others interested in education can be arranged direct with: D. J. Bradford, G3LCK, 42 Mount Road, Canterbury, Kent.

July 28: Royal Armoured Corps Open Day at Bovington Camp, near Wareham, Dorset, when a great variety of vehicles, radio-equipped and otherwise, and the latest Army communications apparatus will be shown in the Signal School, staffed by R.A.C. instructors and students. G3RRZ, who is at the School, will be present to welcome visiting amateurs and show them round —ask for C.O.H. J. Kingston, at the R.A.C. Signal School.

GB3RAF, July 28: Exhibition station at the R.A.F. Stradishall Mobile Rally (*see* "The Mobile Scene"), working all bands 10-80m. A special card will be sent for all contacts, and SWL reports will be welcome. QTH: Flt.-Lt. G. C. Moore, G3MCY, R.A.F. Stradishall, Newmarket, Suffolk.

GB3SRC, August 3-6: Silverthorn Radio Club field outing, located near Sewardstonebury, Chingford, Essex. QSL *via* G2HR (*QTHR*).

GB3SFS, August 9-11: In connection with the South Shields Annual Flower Show in Bents Park, S. Shields, Co. Durham, and organised by the South Shields and District Amateur Radio Club. An LG.300 Tx will be used on the HF bands, and RTTY will also be worked from the stand, for which schedules are wanted with U.K. stations running radio T/P. Write: D. Forster, G3KZZ, 41 Marlborough Street, South Shields, Co. Durham.

SMALL ADVERTISEMENTS

(" SITUATIONS " AND " TRADE ")

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EDDYSTONE 888A communications receiver, with matching Eddystone S-meter, speaker and mounting-blocks, mint condition, best offer over £60.—Box No. 2827, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

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SALE: Eddystone 840A in excellent condition, little used, buyer collects, £35.—C. Pearson, 32 Morland Road, Herdings, Sheffield, 14. *(Phone: 29474.)*

SALE: Tiger 100 Tx, £60. AR88D, £27; both in good condition. WANTED: Top Band Rx/Tx.—G3CIF, St. George's Hotel, Truro, Cornwall. *(Tel: Truro 2554.)*

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WANTED: R.A.E. Correspondence Course.—Box No. 2828, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: Geloso " 207," £35. HRO, 8 GC coils, power pack, speaker, mint, £20. CR-100 mint, £20. CR-300 rebuilt, £20. AVO 7x, £10 10s. mint. Pan-Adapter, AN/APA-10, converted to 230v. 50 c/s, in new condition, £15. Constant voltage transformer, 230v. 2A, £10. Dumont 5-inch 'scope, 115 volts, £15. —L. Riches, 110 Luton Road, Chatham, Kent.

AR88D in LF cabinet, electrically OK, but cabinet needs coat of paint, £25.—Plummer, 33 Preston Lane, R.A.F. Lyneham, Wilts.

SMALL ADVERTISEMENTS, READERS—*continued*

PROP PITCH MOTOR with complete beam rotation gear including transformer, heavy 6-way cable and pair selsyns, £12. Will deliver locally otherwise buyer collects.—G3DJQ, 35 Moor Hall Drive, Sutton Coldfield.

K.W. VICTOR 120-watt Tx, mint condition, offers invited?—*(Telephone: Shoreham 2778.)*

G4ZU BEAM for 20, 15, 10 metres; dural mast 30ft., Panda ATU. Lot £12.—Harrison, 22 Ainsworth Hall Road, Ainsworth, Bolton.

MINIMITTER Six-band converter, Minimitter IF section with Q-multiplier and S-meter, power supplies; really good amateur Rx, £22 10s.—Openshaw, 516 Walmersley Road, Bury, Lancs.

WANTED: Mobile rig for Top Band, please write details and price to—Wooff, 31 Holme Lacey Road, London, S.E.12.

SALE: R.107, excellent condition, recently purchased, complete with S-meter and manual, best offers over £13 or W.H.Y.?—Wickstead, 99 Earlsfield Road, London, S.W.18.

VIRGINIA WATER, Surrey, 30ft. sound mast, swivelling on embedded metal stanchion, both for £5. Buyer extracts, collects. Also good SX-24 (Cambridge), £15.—*(Cambridge 47220.)*

WANTED: Airmec Receiver C.864, good condition.—G. L. Eastell, 136 Arkwrights, Harlow, Essex. *(Tel. Daytime Harlow 24212; Evening Harlow 24811.)*

COMMAND SETS, 0·5-1·5 mc, £6; 1·5-3 mc, £9; 3-6 mc, £5; all brand new in original cartons; 6-9 mc, new, unboxed, £3 10s.—Box No. 2829, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Minimitter MR-37, £15; Raymart Band Checker Monitor 3·5-35 mc (brand new), £2; 7-watt amplifier in cabinet W/speaker (brand new), £6; two Power Packs, £1 each; TV 10s.; 912 Amplifier, £15; Hi-Fi speaker assembly in acoustic craftsman-built cabinet, £15. Many components cheap.—Metcalfe, 3 Sycamore Road, Roby, Nr. Liverpool.

AMATEUR, at present employed as airline navigating officer with total of eleven thousand hours flying as navigator and radio officer mainly on jet aircraft on world-wide routes, age 42, seeks interesting work in radio or aviation owing to redundancy in present employment. Available October.—Box No. 2830, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

TIGER 200, 888A, G4ZU Minibeam and mast to best offers? Also large collection oddments, valves, etc., too numerous to list, at give-away prices, including R.1155, £3; part built oscilloscope with spare valves and VCR-97, £2; signal generators, Command equipment, power packs, radio text books, 1951/63 *Short Wave Magazine*, etc.—Milner, 21 Brooklyn Way, West Drayton, Middx. *(Phone: West Drayton 4192.)*

WANTED: B2 Tx/Rx or similar or just Tx, also 8KW Traps.—Box No. 2831, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SMALL ADVERTISEMENTS, READERS—*continued*

160-10 METRE Tx, 10/50 watts, Geloso VFO, built-in mod., relay control PSU, with Mosley Junior Dipole for 20/15/10 metres, £15. Also Woden UM2 xformer and HRO Junior (in bits), offers?—Lawrence, 33 Sweet Briar Grove, Edmonton, London, N.9.

R. 107T with S-meter, £10. Eddystone 670 Rx, 250 metres to 30 mc, speaker, AC mains, £12. R.1475 Rx, 1·9 mc to 20 mc, AC, £10. 234 AC power pack, output 250 volt 200 mA DC, 6v. 6A, £2; all the above perfect. *QST* 1943 to 1957, 1s. 6d. each; '57 to '63, 2s. UHF Equipment, 10,000 mc gold plated cavities, including klystrons, magnetrons CV208, CV239, CV1495; 8 cm cavities CV90, CV89, IF strips, etc., about £10 the lot, offers? WANTED: Prop Pitch motor or heavy duty rotator. *(Phone: Trevelyan 8141.)*—Write, Briscoe, 311 Eton Road, Ilford, Essex.

EXCHANGE: AR88D with manual, appearance and performance good. WANTED: Mint HRO with BS coils, no junk please—mine isn't.—G3JOM, 1A Princess Terrace, Ripon, Yorks.

SALE: R.107, immaculate condition and performance, only 20 hours' use, realigned, free cover and circuit. £12 10s. o.n.o.? Buyer collects.—Peace, 6 Briar Close, Billericay, Essex.

MINIMITTER 2/7 Tx; R.1155A, speaker and power pack, offers?—Palk, 23 Winstone Avenue, Torquay.

MARCONI REDIFON R50M Receiver, double conversion superior to AR88's, £65. WANTED: Eddystone 680 and Labgear RV-2 VHF Converter.—Cox, 185 North Crescent, Southend, Essex.

MORSE LESSONS. One D/S LP Record, 35s. One D/S LP Record by G3HSC, 35s., both good condition.—L. Douce, 45 Bradstock Road, Birmingham, 30.

FOR SALE: Callers preferred, mornings only: Melhuish, 31 Shepherds Bush Green, W.12. GEC Valve Voltmeter FB, £3. American Sig. Gen. 8-15 mc, 150-180 mc, as new, £2. American 100 & 1000 kc crystal marker, FB, £2. RC Bridge, with phones, working order, 25s. RC substitution box, professional, 15s. RF Unit 26, 10s. RF Unit 27, 12s. 6d. Good order Command Receiver 3-6 mc, working, £1. Power unit with large trans. kV output and many HT and LT outputs, 30s. Saunders meter, centre zero, 12·5 μA either side FSD, scaled to read $\frac{1}{2}$ μA, square, bargain, £3. Two 0-160 voltmeters, mirror scales, 10s. each. Marconi AF power meter, £1. GPO resistance standard with Tinsley light galvanometer, FB. £3 10s. Two 5BP1 CRT's, 10s. R.107 front end with IF strip, etc., power, £2. Box various relays, 15s.

MOHICAN with manual, exchange AR88D with manual, London. Geloso converter, £8 10s., lining up. RF 209 battery converter, 1-20 mc, RF stage, sets IFT's, BFO, £5. IFT Sets, Q'Fiver, 348, CR-100 with xtal filters, 107, 19, BFO's, from 10s. each. Two CR-100 coil boxes, gangs, dial drive, £2 10s. Wavemeter 758A, 55-400 mc, 30s. Rx BC-357H, £2. 82 Tx, £1. S.T.C. miniature 807's, new, £2. 1132, £3. CRT 5CP1, 30s.; VCR138, 15s.; DH-39, £1. 1-in. DG7B, new, £3. BC-456B modulator, £2. Bendix S-meters, right zero, new, £2. Painton switch, gold-plated, 30w, 4P, 6B, convertible, offers? Xtals, dozens, enquire s.a.e. WANTED: 9-16-23, 28 to 32·5 mc for G3BDQ Rx. Class-D, new, £3.—Box No. 2832, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SMALL ADVERTISEMENTS, READERS—*continued*

G3JNG, QRT, Eddystone 750 Receiver, £42; RME 152A VHF Converter, 27-30, 50-55 and 144-149 mc, 7 mc output, 230v. AC, £15. AN/FGC-1 Western Electric Radio Teletype Terminal, £40. RCA FS/C1 frequency shift converter, with RCA Keyer Monitor, £50. Marconi RB-150 VF Bridge Unit, 230v. AC, £12. Marconi combiner unit for above, £5. S.T.C. Rx5 receiver, £60. AN/SGC-1 frequency shift keyer converter, £50. Leveo transcription motor and Goldring pick-up, £9. Leak moving coil pick-up and arm, £2. ASB-8 UHF receiver and power unit, £11. Type 219 pulse generator, 230v. AC, £9.—G3JNG, The Huon, Branksome Hill Road, Bournemouth.

RF UNIT No. 2, 100-156 mc, and RF Unit No. 3 190-240 mc, identical with RF Unit No. 1 described September 1959 issue of *Short Wave Magazine*, offered in new condition, £3 10s. each, p/p 5s. SCR-522, 100-156 mc, complete with mains PU RA62C, mounted on rack with cables and instruction books, nearest £12 10s. Also brand new Collins Tx/Rx 2-9 mc, MO eight pretuned channels on any frequency, 60-watt output, input 24v. DC.—R. Jay, 69 Church Road, Moseley, Birmingham, 13. *(Local callers appointment only Tel : South 2285.)*

HEATHKIT DX-40U, 1963, as new, 10 hours' use, £22 10s. VF-1U VFO ditto, £6. Both unmarked, perfect working condition.—G8BD, 19 Alsford Road, Purbrook, Portsmouth. *(Tel : Waterlooville 3047 after 7 p.m.)*

MANUALS FOR SALE: BC-221, 17s. 6d.; HRO, 20s.; 38 Set AFV, 10s.; *Surplus Conversion Manual*, Vol. 2, 17s. 6d. B7G xtals, 9 freq., available from 10·1250 mc to 10·3916 mc in steps of 33·3 kc, 3s. Valves 3A4, IT4, IL4, 1s. 6d.; TT15, 17s. 6d.; 813, 20s. WANTED: SCR 274N, VHF Manual, also many others, W.H.Y.?—Clarke, 29 Leighinmohr Avenue, Ballymena, Co. Antrim, N. Ireland.

VICEROY MK.III, 5 hours' use. Crystal mike. Coax relay, 100 yards coax. AR88D, manual, mod. for SSB. Miscellaneous items. Cost £225; quick sale, £150 lot, or separately.—Warner, Sunnyside, Manor Road, Send Marsh, Ripley, Surrey.

MOBILE? R.103 Mark II Receiver, modified 12v. filaments, noise limiter, BFO, AVC, RF and AF gains, 1·7 to 7·5 mc, low impedance output, £5 10s.—*(Speedwell 8831.)* G3RDG *(QTHR).*

SALE: CR-100, professionally reconditioned, S-meter, and muting built in, £17; with Minimitter 5-band converter, £26. FB fixed or mobile 4-metre station, modified B.44, with manual, all leads, and microphone, in current use mobile. Would deliver reasonable distance.—G3RDT, *Bognor Regis 1537.*

811A's, 18 only, brand new, 35s. each, plus p/p 1s. Wardle, 31 Greenbank Road, Hoole, Chester.

SALE: DX-100U, 9 months' old, as new, £68. AR88D, clean, unmodified, very good condition, £38 10s. No. 62 Transceiver, 1·6-10 mc, good condition, complete with mic. assembly, manual, but less internal rotary. Ample space internally for transistorised supply, £14.—GM3PZR, 5 Rosselm Cottages, Rossie, Auchtermuchty, Fife.

FOR SALE: K.W.-77 triple-conversion receiver and speaker, absolutely brand new, cost £120 three months ago, will accept £95 o.n.o. for Receiver, £5 speaker, or £97 the two.—J. F. Dingley, 42 Broad Oaks Road, Solihull, Warwickshire. *(SOL 1672 evenings.)*

SMALL ADVERTISEMENTS, READERS—*continued*

XTALS, 500 FT-241A, 243's, singly or in bulk, 1s.-2s. 6d. each depending on frequency and no. ordered.—Rees, 32 Wentworth Crescent, Hayes, Middx. *(HAY 5065.)*

FOR SALE: TCS-2 Receiver, excellent condition, minor fault, but guaranteed perfect working, less PU, £5; postage and packing extra.—Frew, 9 Hollybank Place, Bloxwich, Walsall, Staffs.

SALE: Eddystone 840A, mint, £30 o.n.o.? WANTED: Mint AR88, Eddystone 750, B2 Tx/Rx; state modifications and condition.—Bruce, 437 Helmshore Road, Helmshore, Rossendale, Lancs.

SCR-628A 10-metre FM Tx + Rx's, fully tunable receivers, 29-37 mc, mint condition and manuals, £25 o.n.o.? Exchange SX-24 or W.H.Y.?—Melvyn Rees, 30 Wentworth Crescent, Hayes, Middx.

G4ZU MINIBEAM with telescopic mast and fittings, £12. BC-348 in mint condition, £15, no offers.—Rogers, 163 Lichfield Road, Stone, Staffs.

MINIMITTER MOBILE EQUIPMENT for sale (12-volt supply). 3-band Transmitter 1·8, 3·5, 7·0 mc; centre-loaded whip Antenna with capacity hat for 1·8 mc; transistorised PSU and master control unit. Receiver for above Hallicrafters S-38, 550 kc to 30 mc; all perfect working order, £35, or would consider exchange for AR88D in mint condition. Also for sale, Eddystone S.640 receiver in mint condition, £20.—G3IWE, 36 Wilmslow Crescent, Thelwall, Warrington. *(Phone: Warrington 64178.)*

HEATHKIT MOHICAN, as new with all latest modifications and factory aligned, £25, no offers. —*(Pinner 9124 after 6 p.m.)*

G4ZU 10/15 Minibeam, £6. Bud (USA) variable LP Filter, £1. 157 *Short Wave Magazines*, 1949-1963, £3. 157 *Bulletins*, 1950-1963, £2. Buyers collect.—Poulter, 80 Endsor Street, Moss Side, Manchester, 16.

COMMAND Rx, MW Model in carton, £5. Command Tx, Top Band, new, with internal modulator for xtal mike, and complete with high quality AC p/p, £9. TW Nuvistor Converter, new, unused, £10. QQV07-40, new, boxed, 50s. QQV03-20A's, new, 50s. 12SF7's, new, 9s. Deswyn Compass indicators, 4 inch dial, 15s.; all plus postage.—Box No. 2833, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SIMCA 101 ARY 1961 for sale. Complete 144 mc mobile installation in this immaculate car. QQV03-20A PA runs 60-70 watts, fully modulated by NKT-404 transistorised modulator. Receiver uses 6CW4 RF plus 13 other valves. This car has many extras including, wheel trim, 5 Michelin-X tyres, brake servo, Rayclot pass drive and fog lamp, two sets safety harness, Philips radio, etc., price £650. This car has won prizes at the major rallies of Trentham '61/'62, Wethersfield '62/'63, and many more. Genuine enquiries to—G3FUR Parker, 64 Tinwell Road, Stamford, Lincs. *(Business Tel. 3124, Private 2061.)*

WANTED: HRO Senior Table Model, complete coverage, with PSU, mint condition, no mods.; details, price to—Griffiths, The Cottage, East Chinnock, Yeovil, Somerset.

SALE: CR-100 Receiver, good condition, with manuals, £18. 60w. CW rack transmitter, 10-80 metres, built-in power pack, suitable for beginner, £6; or lot for £23. Prefer buyer collects.—G3KMA, 9 Warwick Close, Hampton, Middx. *(Molesey 2347.)*

SMALL ADVERTISEMENTS, READERS—*continued*

TAYLOR SIGNAL GENERATOR 68A, new, £20. Avominor Universal, £3. *QST's* 1957/60, £1. Stock modern valves, meters, xtals, etc. Olivetti Leterro 22 Typewriter, almost new, £18. G2FZU (going QRT), 18 West End Crescent, Ilkestone, Derbys.

SALE: 2m. phone 10w. Tx, 7 in. x 5 in. x 5 in., meter. cabinet, £6. 2m. CC converter, E88CC RF, 27-29 mc IF, £3 10s. 15-20w. 160/80m. Phone/CW Tx, p/pack, £5 10s. FB5 two-section (one unused) Antenna, £6. 45 ft. 10-section Ali. mast (American), guys, pickets, etc., very good condition. £7 10s.—G8TS, 85 Grand Drive, London, S.W.20. *(Liberty 4572.)*

FOR SALE: CR-300/2, £13 o.n.o.? And a RA-1B, re-valved, £10 o.n.o.? Carriage £1 extra.—QTH, Huggett, 2 Orchard Cottages, Brewer's Street, Lamberhurst, Kent.

EX-6ML QRT: Meissner Shifter 1090, hardly used, best offer; some small power packs, HT/LT, many 6-volt American receiver valves; 100TH, 35T, Klaxon beam rotator, offers?—Box No. 2835, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: CR-100, good condition, 6SG7 RF's, S-meter, NL, spares kit and manual, £16; buyer collects Aldershot. R.A.E. Course complete, £3 10s.—Box No. 2836, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

R.107 working, £6. Transmitter 160, 80, 40, 20m., working, 14 in. x 10 in. including modulator and power, 9 valves, metered, Phone or CW, 1625 amp., £6. One-valve preamp. with power complete, 10s. 80m. VFO with valves, 7s. 6d. VR-97 Tube complete, 7s. 6d. Class-C Wavemeter. 7s. 6d.; HT unit for same, 5s. Moving coil microphone with transformer, 7s. 6d. Good energised speaker, 5s. PM speaker with transformer, 5s. 200 $\mu\mu$F tuning condenser, new, 3s. Choke 20H 100 mA, 5s. 50 valves, 5s. Buyers collect, write first for times.—G2ANB, 78 Broad Walk, Hockley, Essex.

WANTED: A TU5B, 6 or 7, tuner unit complete; state condition and price.—Box No. 2834, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: CR-100 good receiver, £20, o.n.o.? Buyer collect if possible.—Carpenter, 2 Yew Tree Cottages, Thruxton, Andover, Hants.

SSB STATION, Viceroy Mk. II, Hammarlund HQ-170, both under two years' old, condition as new, unscratched, working perfectly, £240 o.n.o.?—G3OGB, 41 Queenborough Gardens, Ilford, Essex. *(Crescent 1697.)*

SALE: Labgear Topbander, £20; Minimitter MC6, 6 mc IF, £15; TW mains PSU, £12. TW 2-metre Tx, £20. 4-ele 4-metre Yagi, £4. 6-over-6 2-metre Yagi, £4 o.n.o.? Add postage.—Marriott. R.A.F. Weyhill, Andover, Hants.

SALE: K.W. Vanguard Tx, 160 to 10 metres, in first-class condition, few hours' use only, £35. Also in new condition, complete Tape/FM Hi-Fi equipment, with Mullard amplifiers, Goodmans bass and tweeter, etc., £40.—G3NYE, 22 Wilcott Road, Gatley, Manchester. *(Phone: GAT 3030 after 6 p.m.)*

SALE: R.109 in excellent condition, with 'phones, spare valves and vibrator, £5 10s. plus carriage, or buyer collect.—G3NKT, 12 Willow Road, Redhill, Surrey. *(Tel.: Reigate 45033.)*

SMALL ADVERTISEMENTS, READERS—*continued*

WANTED: Eddystone 358X coils covering 3·5 mc, 7 mc, 14 mc, 21 mc, 28 mc bands; state price.—B. Rose, 23 Lansdowne Road, West Hartlepool, County Durham.

DRAKE 2B Receiver with Top Band, Q-Mult, notch filter, loudspeaker unit, crystal calibrator and four additional bands, mint (cost £160), best offer over £120 accepted. Plessey Super Power Supply, fully described June *Short Wave Magazine* (p.216), in one louvred case, £10. Buyer collects.—BM/CVWK, London, W.C.1.

JOHNSON "Invader" SSB Transmitter, 200 watts, 10-80 metres, as new, cost £290. Bargain, first offer over £145 secures.—Box No. 2837, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

GONE LAZY. Static and HF. 10-80m. *pi*-coil assembly with v/c's for 813 at 1500v., plus base and RF choke and 807 driver assembly incorporating Labgear wide-band multiplier, £3. SSB Filter Exciter used with above (not 40m.) of G3AOO units, etc. with VOX and Tesla Eddystone 898 dial VFO, in Philpotts 19 in. x 7H in. x 10D in. cabinet, £12. *G.E. Ham News* Rx outboard 455 kc 2·4 Toyo mech. filter unit, incorporating addt. 6BA6 IF amp stage, £8. Collins 455 kc 2 kc mech. filter and USB and LSB osc. xtals, £10. McCoy 9 mc xtal filter with ditto osc. xtals for use in transceiver, £11. Transceiver Cabinet 14½ in. x 6½H in. x 10D in. with Eddystone 898 dial, 5 mc VFO and diode bal. mod. for use with No. 5, £3 10s. Complete Top Band Mobile Tx: 5763 PA 12AX7 mod, modified ditto Command Rx, two 6v. vibrator supplies of 300v. 100 mA, 6v. control relay, with whip aerial and fibre-glass loading coil, all tailored for VW, £6. Minimitter Top Band new mobile all transistor Rx, £8. Master-Mobile fibre glass whip aerial and 10-80m. loading coil and mounting base, £3. HF band car generator noise filter, 10s. RSGB Oct. 1962 *Bull.* 2m. nuvistor converter, 28-30 mc IF, and power supply, £6. Feb. 1963 6 x 6 2m. J-Beam, £3 15s. Cossor Ganging Osc. 343 with instruction book, £9. Collins TCS-12 Rx 1·5-12 mc, with ½-lattice filter, needs slight attention, £3. Valves: 807's 2s. 6d.; 6AGY7's, 832 and 2E26, 5s.; 829b, 5B/254M, 10s.; QV06-40, 6DQ5, 20s. All items o.n.o. and plus carriage.—G3WW, North House, Wimblington, Cambs. *(Doddington (Cambs) 255.)*

WILCOX-GAY VFO, 35s. VFO 1·5-9 mc in 6 bands, 30s. 45 mc IF strips Type 500, two at 14s. each. 3000 mc wavemeter, 29s. Signal generator, 170-240 mc, with mains PU, 30s. Transformer 700-0-700v. 300 mA, 39s. EHT transformer 2000v, 6·3, 6·3, 5 and 4v., 25s. PCR receiver with internal AC mains PU and speaker, £7 9s. 6d. 2-metre 20-element 4-bay beam with matching unit, fits 2 in. mast, £7. Valves: 807 4s. 3d.; 4X150A £2; 4-125 60s.; 4X1504G £4 10s. Carriage extra all items.—Dodd, 21 Bower Road, Harrogate, Yorkshire.

S-METER wanted for AR88 Receiver, please write, stating price to—G3PTN, 3 Toronto Place, Leeds 7, Yorks.

MUST CLEAR SHACK, original G3BDQ Receiver for sale, £30. Collect if possible.—G3BDQ, 201 London Road, St. Leonards-on-Sea, Sussex.

WANTED: Geloso transmitter, G212TR or G222TR, also spare cabinet for same, and Geloso loudspeaker unit; price and details to Joslin, 13 Talbot Road, Skegness, Lincs.

SMALL ADVERTISEMENTS, READERS—*continued*

WANTED: Manuals for R.107 and R.220—Purdy, 416 Broxtowe Lane, Aspley, Nottingham.

AR88D, S-meter, headphones and speaker, £40. AR88LF, S-meter, speaker, £35. Both in first-class condition, prefer buyer collects. Purchasing Collins 75A1 Receiver.—Bell, 27 Churchill Avenue, Horsham, Sussex.

SX-28, very good working condition, several spare valves, £15. Prefer buyer collects.—G3AFR, 6 Gordon Road, Burton Joyce, Notts.

SALE: K.W. Electronics 160m. Tx, latest model, BK keying, mint condn., £19 carriage paid. Money-back guarantee.—G3NQX, W. H. Brown, 1 Gib Lane, Hoghton, Nr. Preston, Lancs.

FOR SALE: Woden UM3, £3. Mains and heater transformers, valves, KT88's, KT66's, etc. Wharfedale speaker; s.a.e. for list.—Butland, 43 Dollis Park, Finchley, N.3.

MOHICAN COMMUNICATIONS RX with manual, slight scratches on case, otherwise mint, £26.—M. Good, 3 Badgers Holt, Longstanton, Cambs.

R.103 1·2 to 8 mc, no PSU, ideal for /M, £4. Test oscillator and capacity bridge, c/w 240v. AC PSU and meter, in case, approx. range 1·2 to 30 mc, 1 to 500 μF, £4. Raymart band-checker, new model, 45s. Transformers: (large), 0-500-1000-1500v., 400 mA, £1; 1750-0-1750v. 750 mA, £3. Six HV capacitors, 25s. Post/cge extra, or £13 10s. the lot to first buyer collecting.—G3ADZ, 3 Norris Gardens, Havant, Hants. *(1861.)*

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